INFORMATION CALENDAR
July 11, 2006

To: Honorable Mayor and Members of the City Council

From: Phil Kamlarz, City Manager

Submitted by: Fred Medrano, Director, Health and Human Services

Subject: Radio Frequency Exposure and Potential Health Effects

INTRODUCTION
This report responds to the City Council’s request for information on the health effects of radio frequency exposure from cell phone base stations and radio frequency identification devices. Currently, there is no consistent or convincing evidence of a causal relation between routine radio frequency exposure from these sources and adverse health effects. However, the potential for longer-term health effects cannot be ruled out. It also forwards the City Attorney’s updated opinion (Attachment 2), which includes a description of the cases decided under federal law concerning the scope of a city’s power to regulate wireless telecommunications facilities based upon radio frequency emissions.

CURRENT SITUATION AND ITS EFFECTS
Wireless telecommunications such as radios and television have long played a vital role in public information and community safety. Police, fire and ambulance services have depended on radio receivers and transmitters and the accompanying antennae for years. Societal benefits of cellular phones and wireless technology do exist, including rapid communications in emergency situations, ability to maintain contact with children, and increased access to information across all social and economic lines.

It is important to emphasize that most radio frequency (RF) studies conducted at frequencies exceeding 1 MHz, examined the results of acute exposure to high levels of RF fields that are not normally found in everyday life. RF is already common and new uses are constantly being identified. Examples of current uses include: many medical devices, Talking Prescriptions for Visually Impaired Veterans, animal identification, cattle, library books, pallet tracking, building safety access control, airline baggage tracking, apparel item, badges, credit cards, commercial containers, truck and trailers in shipping, toll collection, seismic sensors, location sensing, tires, SmartKeys in cars, prisoners, passports, driver’s licenses and much more.

Many human health studies have addressed possible links between exposure to RF fields and excess risk of cancer. To date these studies do not provide enough information to allow a proper evaluation of human cancer risk from RF exposure because the results of these studies are inconsistent. There are differences in the design, execution and interpretation of these studies,
including the identification of populations with substantial RF exposure and retrospective assessment of such exposure. The International EMF (Electromagnetic Field) Project is encouraging coordinated research in this area.

BACKGROUND

Community members have expressed concern over the proliferation of cell phone base stations. Concerns include noise from the base stations, long-term health impact of radio frequency exposures from the base stations, and concerns that cell phone tower base stations are concentrated in certain neighborhoods. The Phillips Temple application for cell phone base station placement prompted the Community Health Commission (CHC) to review available information. The CHC concluded, “The City should apply the Precautionary Principle when considering applications for installation of equipment that emits RF in Berkeley”. At its regular meeting of November 17, 2005, the CHC approved the following motion: **M/S/C (Lewak/Medley)** to require the installation of cell phone base stations to meet the highest standard of human health and safety requirements that exists anywhere in the world. **Ayes:** Unanimous; **Absent:** Adler, Bergman, Fowles, Gill, Kahn, Newman, Pascopella.

Further, there has been substantial public debate about the placement and use of radio frequency identification devices (RFID) in the Berkeley Public Library. At the November 15, 2005 Council meeting, Council approved a recommendation to request that the Health Officer report back to Council in six months regarding possible health effects of the City’s uses of RFID technology and systems.

In January 2006, Council received a report (Attachment 3) from the CHC recommending that the installation of cell phone base stations in Berkeley be required to meet the highest standards of human health and safety requirements that exist anywhere in the world (i.e. 1/100th of current United States standards). Council also received a report from the City Manager advising that federal law preempts the CHC’s recommendation, and requesting that Council defer any other action pending a report from the Health Officer on radio frequency exposures. On January 24, 2006, Council approved the City Manager’s recommendations to defer any action pending a report from the Health Officer, and also requested that staff continue to pursue the feasibility of a citywide wireless Internet system.

The following defines certain terminology used and addresses key issues raised in reference to RF:

**Thermal Effects of RF:** High intensity RF exposure may increase the body temperature. This is known as the thermal effect. Although the body has ways to regulate its temperature, if the RF exposures are too high, the body may not be able to cope with the increased temperature. There is some concern that long-term cell phone users may be at risk for health effects; however few studies have included enough cases to confidently conclude whether or not there is a link between cell phone use and brain cancer. Current federal guidelines regarding exposure levels of RF are intended to provide protection against thermal effects.

**Exposure to RF Fields and Cancer:** Current scientific evidence indicates that exposure to RF fields is unlikely to induce or promote cancers. Cancer studies using animals have not provided convincing evidence for an effect on tumor incidence. There have been some cancer clusters
reported near cell phone base stations; studies have been inconsistent with regard to the relationship between cell phone use and tumors such as acoustic neuromas. Overall, epidemiological studies have not supported a relationship between RF exposures and increase risk of cancer

**RF and Cellular Effects:** Exposure to low-levels of RF fields, too low to produce heating, has been reported to alter the electrical activity of the brain in cats and rabbits by changing calcium ion mobility. This effect has also been reported in isolated tissues and cells. Other studies have suggested that RF fields change the proliferation rate of cells, alter enzyme activity or affect the genes in the DNA of cells. However, these effects are not well established, nor are their implications for human health sufficiently well understood to provide a basis for restricting human exposure.

**Electromagnetic interference and other effects:** Mobile telephones, as well as many other common electronic devices, can cause electromagnetic interference in other electrical equipment. Therefore, caution should be exercised when using mobile telephones around sensitive electromedical equipment such as those used in hospital intensive care units. Mobile telephones can, in rare instances, also cause interference in certain other medical devices, such as cardiac pacemakers and hearing aids.

**Sources of RF Exposure:** Most RF fields found in the environment are due to commercial radio and TV broadcasting, and from telecommunications facilities. RF exposure from telecommunications facilities is generally less than from radio or TV broadcasting. RF sources include microwave ovens, mobile telephones, cordless phones, wireless routers, burglar alarms, video display units and TV sets. Microwave ovens that could potentially be the source of very high RF levels are covered by product performance standards, which limit the amount of microwave leakage. Cell phone use produces relatively high RF exposure absent use of a headset to increase distance from phone to head.

Relatively high levels of exposure to RF fields can occur to workers in the broadcasting, transport and communications industries when they work in close proximity to RF transmitting antennas and radar systems.

**Radio Frequency Identification (RFID)** is an automatic identification system by storing and retrieving data using RFID tags that contain silicon chips and antennas that enable them to receive and respond to radio-frequencies. RFIDs are used in retail stores, Fastrack, building security, auto locks, and many other applications.

**Other Jurisdictions:** The City and County of San Francisco requires base station applicants to monitor levels prior to coming on line if there are residents within 25 feet of the site and to offer monitoring to the residents every two years. SF guidelines adopt the ANSI standards, levels and mitigation measures of signage, barriers, distances, etc. Also, their guidelines do not allow towers at public schools although private schools have them.

**POSSIBLE FUTURE ACTIONS**
There are multiple sources of radio frequency beyond the two before City Council. The complexity of exposure and the lack of expertise in the City of Berkeley make it unclear what an appropriate precautionary response would be at this time. Further research is needed and we need to wait for more information from the experts at the State level. The City Council may consider making a formal request to the State of California Department of Health Services to assess the health effects of radio frequency exposure and report to local government the assessment results and recommendations to minimize any potential adverse health effects.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTIONS
None.

CONTACT PERSON
Linda Rudolph, MD, MPH, Health Officer, 981-5339

Attachments
1. Research on the Potential Health Effects of Radio frequency
2. Updated City Attorney Opinion regarding Preemption of Local Regulation based on Health Effects of Radio frequency Emissions under the Telecommunications Act of 1996
4. March 9, 2004 Report on Base Station Antennas
A large number of governmental and international bodies have conducted in-depth reviews of the available information about the potential health effects of radio frequency exposure. These are summarized below.

- **IEEE/ANSI, 1991**: The American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE) are the bodies on whom the United States Federal Communications Commission relies for its expertise. A panel of scientists and medical experts from IEEE/ANSI has developed safety standards, recommendations and guidelines for exposure to radio frequency and microwave energy. Its position is that there is no cause for concern regarding the environmental levels of radio frequency EMFs to which the general population are routinely exposed. [http://ewh.ieee.org/soc/embs/comar/](http://ewh.ieee.org/soc/embs/comar/)

- **ICNIRP, 1995**: The International Commission on Non-Ionizing Radiation Protection (ICNIRP) is an independent scientific organization established to investigate the hazards that may be associated with the different forms of non-ionizing radiation (NIR) and to develop international guidelines on NIR exposure limits. A scientific summary report by ICNIRP (1995) stated: "This review is provided to supplement the conclusion reached about RF-field exposure and possible health effects. All learned reviews have concluded that the RF fields emitted from base stations do not have any known impact on health. While research is continuing to determine if there are health effects from very low levels, it is only possible to make decisions based on our present knowledge. Regulators are well aware of the fact that physical agents such as X-rays, asbestos and smoking were once considered safe but later studies revealed they were not. In the case of RF, studies have continued for some 40 years and laboratory techniques are extremely sensitive. While it cannot be dismissed that subtle effects will be found in the future, it is comforting to know that a large amount of research has been conducted and international and national standards have not had to be lowered for more than 15 years. Another point that needs to be remembered is that the RF emissions from base stations are some 30,000 times lower than the levels at which the first health effects begin to be established". [www.icnirp.de](http://www.icnirp.de)

- **Statement from the WHO EMF Project**: The Project has produced a paper examining the possible non-thermal effects of RF (Matthes et al., 1996). At an international seminar in Munich in 1996 sponsored by WHO, ICNIRP and others, expert working groups reviewed the RF scientific literature and concluded that, "from the current scientific literature, there is no convincing evidence that exposure to RF shortens the life span of humans, induces or promotes cancer". They also stated that "although hazards from exposure to high-level (thermal) RF fields were established, no known health hazards were associated with exposure to RF sources emitting fields too low to cause a significant temperature rise in tissue." [www.who.int/inf-fs/en/fact/en; www.who.int/peh-emf/en](http://www.who.int/inf-fs/en/fact/en;www.who.int/peh-emf/en)


- **Royal Society of Canada, 1999**: An Expert Panel of the Society concluded: "To date, human health studies have examined the relationship between exposure to radio frequency fields and different types of cancer, reproductive problems, congenital anomalies, epilepsy, headache and suicide. Overall, these studies do not provide conclusive evidence of adverse health effects from radio frequency exposure. However, given the limitations of the
currently published studies in this area, particularly the difficulty in determining the precise nature of the exposure to radio frequency fields that people have actually received, more research is required on radio frequency field exposure and human health."

www.rsc.ca/files/publications/expert_panels/EMF//EMFreport.pdf

- The Independent Expert Group on Mobile phones in the UK, 2000: This Group stated that: "The balance of evidence to date suggests that exposures to RF radiation below NRPB and ICNIRP guidelines do not cause adverse health effects to the general population." www.iegmp.org.uk

- NRPB Advisory Group on Non-ionising Radiation (AGNIR), 2003: This was a follow-up review to that by the Independent Expert Group on Mobile Phones. The AGNIR stated: "In aggregate the research published since the IEGMP report does not give cause for concern. The weight of evidence now available does not suggest that there are adverse effects from exposures to RF fields below guideline levels, but the published research on RF exposures and health has limitations, and mobile phones have only been in widespread use for a relatively short time. The possibility therefore remains open that there could be health effects from exposure to RF fields below guideline levels; hence continued research is needed". http://www.hpa.org.uk/radiation/advisory_groups/agnir/index.htm

- The Swedish Radiation Protection Authority, SSI, 2003: The SSI has appointed an international independent expert group for electromagnetic fields and health. The task is to follow and evaluate scientific developments and to give advice to SSI. The group has issued its first annual report. Its conclusions were: "The focus of this report is on epidemiological and experimental cancer research, blood-brain barrier and heat shock proteins. In none of these areas have there been breakthrough results that have warranted firm conclusions in one way or the other. It is worth noting, however, that intense research is currently ongoing in several countries and new data will gradually become available. Given the complexity of the research area it is essential that both positive and negative results be replicated before accepted. Given the increase of new technologies, it is essential to follow various possible health effects from the very beginning, particularly since such effects may be detected only after a long duration, due to the prolonged latency period of many chronic diseases. Thus, more research is needed to address long-term exposure, as well as diseases other than those included in the ongoing case-control studies".


- Nordic competent authorities, 2004: The Danish national Board of Health, the Radiation and Nuclear Safety Authority of Finland, and the Radiation Protection authorities of Iceland, Norway, and Sweden issued a joint statement about cell phones and health. They stated: "The Nordic authorities agree that there is no scientific evidence for any adverse health effects from mobile telecommunication systems, neither from the base stations nor from the handsets, below the basic restrictions and reference values recommended by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). However, certain knowledge gaps exist that justifies more research in this field. There are a number of published reports suggesting that biological effects may occur at exposure levels below the ICNIRP guidelines. These studies need to be reproduced and the scientific progress in these fields of research should be followed carefully. In this context, however, it is important to note that biological effects do not necessarily imply health hazard".

July 5, 2006

To: Honorable Mayor and
    Members of the City Council and
    City Manager

From: Manuela Albuquerque, City Attorney

Re: PREEMPTION OF LOCAL REGULATION BASED ON HEALTH EFFECTS OF RADIO FREQUENCY EMISSIONS UNDER THE
    TELECOMMUNICATIONS ACT OF 1996

ISSUE PRESENTED

The City Council has previously been advised a number of occasions that that federal law preempts local governments from regulating wireless telecommunication facilities based on concerns about the health effects of radio frequency (RF) emissions.

Most recently, it has asked that the City Attorney list all of the cases decided under this preemption provision.

This memorandum reiterates our most recent advice, and briefly discusses the cases that address this issue.

SHORT ANSWER

Local governments, including Berkeley are completely preempted from regulating wireless telecommunication facilities based on concerns about the health effects of radio frequency emissions.

BACKGROUND

In December 2000, the Council adopted by urgency ordinance a 45-day moratorium on the approval of new wireless telecommunications facilities throughout Berkeley. The Council subsequently extended the moratorium through December 31st of that year.
During 2001, staff drafted, and the Planning Commission considered, a more comprehensive and detailed ordinance regulating wireless telecommunication facilities. In November 2001, the Planning Commission recommended approval of that ordinance, with various amendments. The Council adopted that ordinance in December 2001, and it is codified as Chapter 23C.17 of the Berkeley Municipal Code.

DISCUSSION

The Telecommunications Act of 1996, (“TCA”; 47 U.S.C. §332(c)) generally preserves local zoning authority over wireless telecommunications antennas for personal wireless service:

Except as provided in this paragraph, nothing in this chapter shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities.

(47 U.S.C. 332(c)(7)(A).)

However the TCA also limits this authority in a number of significant respects. Specifically, it provides that

No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Federal Communication] Commission’s regulations concerning such emissions.

(47 U.S.C. 332(c)(7)(B)(iv).)

The courts have been quite clear that this language means what it says, and that local regulation of personal telecommunication services on the basis of health effects of RF emissions is preempted. (Cellular Phone Taskforce v. F.C.C. (2nd Cir. 2000) 205 F.3d 82, cert. denied, 531 U.S. 1070, 121 S.Ct. 758, 148 L.Ed.2d 661; Telespectrum, Inc. v. Public Service Commission of Kentucky (6th Cir. 2000) 227 F.3d 414.)

It has been suggested that the U.S. Supreme Court’s recent decision in City of Rancho Palos Verdes v. Abrams (2005) 544 U.S. 113, 161 L.Ed.2d 316, 125 S.Ct. 1453, somehow increases the City’s leeway to regulate on the basis of concerns about the health effects of RF emissions. This is incorrect. Abrams merely held that violation of the TCA did not constitute a denial of civil rights under 42 U.S.C. § 1983 for which damages and attorneys’ fees were available. It did not give local governments any greater substantive powers under the TCA, and in fact arose out a case in which a city’s denial of a use permit was invalidated under Section 332.
Accordingly, the City may not impose any limitations or restrictions on the establishment or location of wireless telecommunication facilities based on concerns about the health effects of radio frequency (RF) emissions.

In response to the Council’s request for additional case authority, we digest below a number of cases decided under Section 332.


   AT&T filed suit under Section 332 alleging that the city had unlawfully denied its application for a Conditional Use Permit (CUP) for a cell antenna site. The court ruled that the denial of AT&T’s application for permit was not supported by substantial evidence and was impermissibly based on concern over health effects of radio frequency emissions. The court “conclude[d] that concern over the decrease in property values may not be considered as substantial evidence if the fear of property value depreciation is based on concern over the health effects caused by RF emissions. Thus, direct or indirect concerns over the health effects of RF emissions may not serve as substantial evidence to support the denial of an application.” (Id. at 1159.)

   The court further noted that Congress intended this federal preemption:

   The conferees intend section 332(c)(7)(B)(iv) to prevent a State or local government or its instrumentalities from basing the regulation of the placement, construction, or modification of CMS facilities directly or indirectly on the environmental effects of radio frequency emissions if those facilities comply with the Commission's regulations...H.R. Conference Report No. 104-458, 201 (1996)

   (Id.)


   The plaintiff challenged a county’s denial of its application for a special use permit to build a cellular telephone transmission tower in violation of § 704 the Telecommunications Act of 1996. The court rejected the county’s concerns about possible health effects of the proposed tower since the county could not consider potential health effects of Plaintiff's proposed cell site under 47 U.S.C. § 332(c)(7)(B)(iv) and ordered the county to grant the special use permit.


   The court agreed with the city’s position that 47 U.S.C.S. § 332(c)(7)(B)(iv) “prevents the denial of a permit on the sole basis that the facility would cause negative environmental effects.” (Id. at 924.)

SBA challenged a town’s denial of special permits to construct a wireless telecommunication facility. In rejecting citizens’ concerns about adverse health concerns, the court rejected the citizens’ testimony at the public hearings as generalized concerns about the possibility of adverse health effects from radio frequency emissions emanating from the proposed cell site.


Telespectrum applied to the Public Service Commission of Kentucky for a Certificate of Public Convenience and Necessity to construct a 199-foot tall wireless telecommunications tower in Carter County, Kentucky. Two individuals who lived about 412 feet from the proposed site complained because of health dangers from exposure to waves emitted from the tower. After a public hearing, the commission denied the application. The U.S. Court of Appeals for the Sixth Circuit affirmed the District Court’s decision that the commission’s decision was unsupported by substantial evidence.

It stated that “we recognize that concerns of health risks due to the emissions may not constitute substantial evidence in support of denial by statutory rule, as no state or local government or instrumentality thereof may regulate the construction of personal wireless facilities ‘on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission’s regulations concerning such emissions.’” 47 U.S.C. § 332(c)(7)(B)(iv). (Id. at 424.)


Sprint Spectrum applied for a special permit to erect a 143-foot tall monopole for wireless personal communication services. The town denied the application, then passed a nine-month moratorium on new telecommunications antenna facilities precluding the company from submitting an application. The court held that the town’s grounds for denial were not supported by substantial evidence because it had based its denial on the “effect on property values that an unfounded fear of [radio frequency] emissions could have.” (Id. at 13.) The court ruled that the town had therefore violated the TCA by basing its decision on the effects of radio frequency emissions, contrary to Section 332(c)(7)(B)(iv), which was intended to prohibit the commission from “basing the regulation of the placement ... [of the monopole] directly or indirectly on the environmental effects of radio frequency emissions.” (Id.)
7. Cellular Phone Taskforce v. FCC (2nd Cir. 2000) 205 F.3rd 82, cert. denied, 531 U.S. 1070, 121 S.Ct. 758, 148 L.Ed.2d 661

Petitioners appealed from two final opinions and orders in which the FCC promulgated guidelines for health and safety standards of radio frequency (“RF”) radiation and “retained the exclusive ability to regulate the relevant radio facility operations.” (Id. at 87.) Pursuant to its rulemaking authority, the FCC has issued an interpretive ruling preempting state and local governments from regulating, personal wireless service facilities that comply with FCC regulations based on RF emissions. (Id. at 95-96.) Petitioners claimed that the “FCC’s interpretation is contrary to plain congressional intent.” (Id.) The court rejected the petitioners’ arguments, recognizing that “[t]he FCC has broad preemption authority under the Telecommunications Act.” Thus, “[s]ection 332(c)(7)(B)(iv) does not amount to clear congressional intent to permit state and local governments to regulate the operation of such facilities. The FCC’s interpretation is therefore entitled to deference and, because the FCC's interpretation is reasonable, we are bound to accept it.” (Id; emphasis added.)


The Massachusetts district court noted that “in general, the Federal Communications Commission has broad preemption authority under the Telecommunications Act, particularly with respect to attempts by a state or locality to regulate wireless services on the basis of perceived environmental effects of radio frequency emissions. 47 U.S.C. § 332(c)(7)(B)” (Id. at 40.)

9. Cellular Tel. Co. v. Town of Oyster Bay (2nd Cir. 1999) 166 F.3rd 490

The defendant town denied plaintiff’s petitions for two cell sites, and plaintiff sued. The district court granted summary judgment for plaintiff, holding that the permit denials violated the Telecommunications Act of 1996. The U.S. Court of Appeals for the Second Circuit affirmed the injunction requiring town to issue special use permits to applicant was proper because the town’s denial of the permits was clearly based on concerns over the environmental effects of radio frequency emissions, in violation of the Telecommunications Act. The court noted that it considers the terms “environmental effects” and “health concerns” to be interchangeable. (Id. at 494 fn.3.)


The plaintiff challenged the township’s denial of its application to build a cell tower and imposition of a moratorium on such facilities. The court ruled for the plaintiff and issued an injunction because even though the moratorium was based in part on aesthetic concerns, it was also based in part on potential adverse health effects. The court stated that “[t]he record also contains numerous references regarding the possible adverse health
effects of the proposed tower. However, numerous courts have concluded that § 332(c)(7)(B)(iv) precludes consideration of such concerns and thus cannot constitute substantial evidence.” (Id. at 42.)


The district court ordered the zoning board to grant the plaintiffs’ application to build a cell tower because it had violated the Telecommunications Act by considering the health effects of radio frequency emissions. It stated that “[e]ven if such purported health effects were based on scientific evidence, which they are not, this court is not permitted to consider evidence of supposed ill health effects of radio frequency emissions pursuant to the TCA…” (Id. at 880, fn.7.)


Plaintiff, a provider of cellular telephone service, challenged the city’s denial of a variance to allow the placement of a cellular telephone tower. The court ruled for the plaintiff. It noted that one neighbor had expressed concern at public hearings about electromagnetic emissions and that the plaintiff’s engineer had stated that the antennae’s emissions would be well below FCC standards, and then stated: “Congress has expressly prohibited local authorities from denying permits to construct telecommunications towers ‘on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [FCC]’s regulations concerning such emissions.’ 47 U.S.C. § 332(c)(7)(B)(iv).” (Id. at 770.)


The plaintiff alleged that defendant county violated the Telecommunications Act of 1996 by denying its application for a special use permit to construct a broadcast tower in the county. Although it upheld the county’s decision, the court noted: “Some citizens mentioned health concerns in opposing the tower; however, these concerns are precluded by the Act. 47 U.S.C. § 332(c)(7)(B)(iv).” (Id. at 15.)


Petitioner applied for conditional use permits from San Juan County to build two cellular facilities on San Juan Island and two on Lopez Island. The county denied these requests, and petitioners filed suit alleging a violation of the Telecommunications Act of 1996. The court remanded the case to the county in part because it had improperly based its decision on environmental concerns. The court stated:

The Court also concludes that remand is appropriate because the members of the Board relied upon evidence which could not be considered in making their
decision as a matter of law. The Board based its decision in part on the “vehement opposition” of residents and property owners and in part on fears of reduced property values, see Finding Nos. 2 & 5, both of which flowed from concerns about the health effects of radio frequency emissions from the cellular facilities. As reflected in the Telecommunications Act, Congress has determined that facilities that comply with applicable Federal Communications Commission (“FCC”) regulations do not pose a health risk and cannot be a basis for denying a permit. 47 U.S.C § 332(c) (7) (B) (IV). Although the Board’s Finding No. 7 acknowledged that “it has been decided by the Federal Government that the proposed use will not cause significant adverse impacts on the human or natural environments,” it is not possible for the Court to know whether or to what extent the Board relied on testimony or other evidence about these possible adverse impacts in reaching its decision. Remand is appropriate for the Board to explain what it did rely upon so that the Court can be assured that it did not rely upon concerns related to radio frequency emissions.

(Id. at 1131.)


Plaintiffs, filed suit under the Telecommunications Act of 1996 after defendant county denied their application for a permit to build a cellular tower. The court ruled that the decision was not supported by substantial evidence because it was based on expressed health concerns about being exposed to microwave emissions. (Id. at 926.)


Plaintiff sued the city, the city under the Telecommunications Act of 1996 because city denied two applications to install panel antennas located on rooftops. The court restated the general rule that:

[H]ealth concerns expressed by residents cannot constitute substantial evidence. See 47 U.S.C. § 332(c)(7)(B)(iv) (“No . . . local government . . . may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions.”).

(Id. at 341.)

17. MetroPCS, Inc. v. City & County of San Francisco (9th Cir 2004) 400 F.3rd 715

In a comprehensive opinion that resolved a number of issues that had remained unresolved in the Ninth Circuit, the court went out of its way to make clear that “[t]he TCA provides that localities may not base zoning decisions on concerns over radio
frequency emissions if the proposed wireless facility complies with FCC emissions requirements…” (Id. at 736.)


After upholding the city’s denial of a conditional use permit to erect communications towers in a residential area of Virginia Beach, the court nevertheless restated the rule: “A few citizens did mention health concerns from radio emissions, a concern the Act precludes, 47 U.S.C. 332(c)(7)(B)(iv)…” (Id. at 431. fn.6.)

cc: City Clerk
Index: V.A.; V.B.1., V.B.3.
To: Honorable Mayor and  
   Members of the City Council  

From:  Community Health Commission  

Submitted by: Tom Kelly, Commission Chair, Community Health Commission  

Subject: Cell Phone Antennae and Potential Adverse Health Effects of Radiofrequency Radiation  

RECOMMENDATION  
Require the installation of cell phone base stations to meet the highest standard of human health and safety requirements that exists anywhere in the world (e.g. 1/100 of current U.S. standards).  

FISCAL IMPACTS OF RECOMMENDATION  
None  

CURRENT SITUATION AND ITS EFFECTS  
Current City procedures allow installation of cell phone base stations by vendors if estimates of radiofrequency exposure to general public are within maximum exposure limits suggested by Federal Communications Commission (FCC) guidelines. The FCC guidelines were based on National Council on Radiation Protection and Measurements (NCRP) report published in 1986, and were updated and finalized in 1997. Since at least 21 epidemiologic studies have been published since 1997, the basis for these guidelines are outdated. It is possible that cell phone base stations in Berkeley are exposing residents to levels of radiofrequency radiation that may be harmful to their health.  

BACKGROUND  
In response to community concern expressed about the potential adverse health effects of radiofrequency fields (RF) from cell phone base stations at 3332 Adeline St., the Community Health Commission (CHC) undertook an investigation. The purpose of the investigation was to determine the current status of publicly available knowledge of human health effects associated with exposure to RF.  

There are many studies that suggest an association of exposure to RF and adverse health effects, independent of those caused by thermal effects on which the current national guidelines for exposure are based. These include studies in animals and epidemiologic studies of human populations. However, there are also studies that do not demonstrate adverse health effects.
resulting from exposure to RF. Thus, there is currently no consensus among the scientific community regarding the association of RF and adverse health effects. The International Commission for Non-Ionizing Radiation Protection, ICNIRP, a nongovernmental organization that is formally recognized by the World Health Organization (WHO), completed a comprehensive review of epidemiologic studies about the effects of RFs on human health in 2004 (ICNIRP, “Epidemiology of Health Effects of Radiofrequency Exposure,” 2004, Environmental Health Perspectives, 112: 1741-1754). These studies included those that observed outcomes such as brain tumors, leukemias, and reproductive health outcomes. The reviewed studies included those that did and did not show an increased risk associated with RF. This review determined that, despite the ubiquity of new technologies using RF, all reviewed studies lacked appropriate assessment of RF exposure, thereby preventing meaningful conclusions. No studies examined consequences of exposures in children, a population that is generally more vulnerable to environmental exposures due to their rapidly developing bodies, and critical periods of development that may be permanently damaged by exposures. In addition, the U.S. National Council on Radiation Protection and Measurements (NCRP) has determined that existing studies of RF and human health are not sufficient to draw conclusions. While WHO is sponsoring further research into the issue, their current recommendations are to consult with the community in siting base stations, and to provide “special consideration” when siting base stations near kindergartens, schools and playgrounds – an indication that caution should be a consideration until more is known about the health effects of RF exposure (www.who.int/mediacentre/factsheets/fs193).

RATIONALE FOR RECOMMENDATION
The potential for widespread exposure to RF in Berkeley is great. Since it is possible that this exposure may result in adverse health effects, and impact the public health, the City should apply the Precautionary Principle when considering applications for installation of equipment that emits RF in Berkeley. The City’s Resolution on the Precautionary Principle states in part: “when there are reasonable grounds for concern, the Precautionary Principle requires careful analysis of available alternatives and favors selection of the alternative action, including no action, presenting the least potential threat to human health…” Applying the Precautionary Principle in this situation would include these suggested recommendations. Switzerland has one of the most protective standards for radiofrequency exposure at 1/100th of the maximum exposure limit suggested by U.S. guidelines (which is approximately 580 micro-Watts per square centimeter for radiation at a frequency of 869 MHz, www.fcc.gov/oet and www.europa.eu.int/comm/health)

ALTERNATIVE ACTIONS CONSIDERED
• Obtain an enforceable agreement with the vendor to dismantle cell phone base stations if the WHO or other credible research organization determines that exposure to radiofrequency radiation (RF) is harmful to human health; or
• Establish a moratorium on all cell phone base station installation until further information on the health effects of RF exposure is available

CITY MANAGER
See companion report
ATTACHMENT 4

INFORMATION CALENDAR
March 9, 2004

To: Honorable Mayor and
Members of the City Council

From: Phil Kamlarz, Acting City Manager

Subject: Base Station Antennas

INTRODUCTION

This report is in response to City Council’s request for information on the safety of the base station antennas planned for 1600 Shattuck Avenue. This report provides information about the type of radiation, the standards that must be adhered to for public safety, and what requirements must be met in order for the antennas to be sited safely.

CURRENT SITUATION AND ITS EFFECTS

Mobile phones and their base stations produce radio-frequency radiation (RF). Both are low power with short ranges of exposure. RF is "non-ionizing" radiation--that is, its energy is too low to break chemical bonds and thus cannot damage the genetic material of cells. There may be reason to be concerned about the potential effects from cell phones themselves because the antennas of these phones deliver much of their radio frequency energy to very small volumes of the user's body. Base station antennas do not do this and the consensus of the scientific community, as presented in all the published literature on the biological effects of RF, agrees that:

1. Exposure to RF radiation can be hazardous (cataracts, skin burns, deep burns, heat exhaustion, heat stroke), but the exposure must be sufficiently intense.
2. The biological effects of RF radiation depend on the rate of energy absorption and are proportional to the rate; duration of exposure matters very little. In addition, within a broad range of frequencies (1 to 10,000 MHz), frequency matters very little.
3. No biological effects have been demonstrated consistently below a threshold level of absorption.
4. Finally, given what is known, the research is extensive and is adequate for establishing safety standards.

BACKGROUND

National and international safety guidelines for exposure to the public have been developed by multiple agencies including the International Commission of Non-Ionizing Radiation Protection, the National Council on Radiation Protection and Measurements, the Institute of Electrical and Electronics Engineers and American National Standards Institute, and the Federal Communications Commission. The standards vary slightly but all meet a general standard: a 15-fold safety margin for continuous exposure of the general public—that is, 15 times the level at which biological effects have been demonstrated.

In addition to general safety guidelines for exposure, there are also existing criteria for the safe placement of antennas. For the general public, the requirements are basically that antennas must be placed such that the general public cannot access areas that exceed the 1992 FCC guidelines for public exposure. This translates into limiting public exposure to more than 6 meters or 20 feet from an antenna. Because of the physics of RF radiation, very little radiation is emitted straight down, but rather horizontally in relatively narrow paths. Therefore RF exposure on the ground is typically thousands of times less than the safety thresholds. Power density inside a building will be lower by a factor of 3 to 20 times that of outside.

It is important to note that actual measurements done repeatedly in many different situations and countries have demonstrated that the power density within buildings is far below current safety guidelines and that power levels on the ground have never been measured higher than the guidelines for continuous public exposure.

Fortunately or unfortunately, depending on one’s perspective, cell phones are established in our culture. Given the physics of RF radiation, it may actually be more hazardous to the public to move base antennas away from an area where there are mobile phone users because horizontal distance from a base station is less protective than increasing the antenna height. Increasing the horizontal distance may:

1. Increase the actual exposure of the users from their handsets;
2. Require the base antenna power to be increased;
3. Require the base antennas to be placed further above the ground;
4. Increase cell size and thus limit the number of users allowed in an area.

To ensure that the radiation levels remain well below current safety standards there are two suggested methods for doing so. These are:

1. RF radiation levels at a site should be modeled before the site is built.
2. Once built, the RF radiation levels should be measured and monitored at regular intervals.

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