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●移動通信の普及でアンテナの安全にも懸念拡大

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無線通信アンテナの安全基準は、アンテナの設置場所が一般立入禁止されていた時代に制定されたものだが、現在は、移動通信の普及でアンテナは屋上、公園、スタジアムなど日常的に人が出入りする場所にも設置されており、その数も 30 万か所以上と、10 年前に比べて 2 倍近くに増えている。

連邦規則では、アンテナに不用意に近付いて危険な量の電磁波を浴びないようにアンテナを囲う、注意標識を掲示する、作業員に適切なトレーニングを提供することなどを定めている。

しかし、5000 か所以上の安全検査では、10 か所に 1 つがこの安全規則に違反していることが判明している。

電磁波は、2011 年に WHO が発癌の可能性があると判断。これを受けて、国立労働安全衛生研究所や国立衛生研究所でも電磁波が健康に与える影響の研究が進められており、FCC のガイドラインでも、比較的低レベルの電磁波が免疫システムや神経系に影響を与え、がんの原因となる可能性があるとする注意書きが追加されている。

スプリントは、同社のアンテナはいずれも安全基準を満たしているとしており、AT&T も作業員や一般市民を電磁波から守ることは最重要視しており、電磁波の被曝を最小限に抑える厳格な安全プログラムを運営しているとのことだが、2011 年には、スプリントの下請け業者の作業員がトレーニングや雇用主からの注意を受けないままアンテナ近くで 300 回以上にわたって作業をした結果、認知障害を発生したとして連邦労務当局に訴え。また、ベライゾン今年 4 月、ペンシルベニアとコネチカットでの安全基準違反で FCC と和解。5 万ドルを従業員、下請けのトレーニングに投資することを約束している。

(参考) 本件報道記事

Cellphone Boom Spurs Antenna-Safety Worries

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The antennas fueling the nation's cellphone boom are challenging federal safety rules that were put in place when signals largely radiated from remote towers off-limits to the public.

Now, antennas are in more than 300,000 locations -- rooftops, parks, stadiums -- nearly double the number of 10 years ago, according to the industry trade group CTIA.

Federal rules require carriers to use barricades, signs and training to protect people from excessive radio-frequency radiation, the waves of electric and magnetic power that carry signals. The power isn't considered harmful by the time it reaches the street, but for workers and residents near an antenna, it can be a risk.

One in 10 sites violates the rules, according to six engineers who examined more than 5,000 sites during safety audits for carriers and local municipalities, underscoring a safety lapse in the network that makes cellphones hum, at a time when the health effects of antennas are being debated world-wide.

The FCC has issued just two citations to cell carriers since adopting the rules in 1996. The FCC says it lacks resources to monitor each antenna.

"It's like having a speed limit and no police," said Marvin Wessel, an engineer who has audited more than 3,000 sites and found one in 10 out of compliance.

On a sweltering June day in Phoenix, Mr. Wessel strolled through a residential area near Echo Canyon Park and spotted lawn chairs near a T-Mobile US Inc. cellular antenna painted brown to match a fence. His monitor showed emissions well above safety limits.

After being alerted by The Wall Street Journal, T-Mobile added warning signs and roped off a patch in front of the antenna with a chain. "The safety of the

public, our customers and our employees is a responsibility that all of us here at T-Mobile take very seriously," said a T-Mobile spokeswoman.

At very high levels, radio-frequency radiation can cook human tissue, the FCC said, potentially causing cataracts and temporary sterility and other health issues.

To buffer people from these "thermal" effects, the FCC set two limits for how much RF people can absorb -- one for the general public, and an "occupational" limit five times higher for people trained to work near antennas. The higher level is still 10 times below the thermal level.

Carriers have to restrict access near antennas that are above the limits. Workers and others who venture into hot zones -- generally up to 20 feet in front of an antenna -- must be trained and have RF monitors.

Most cellular antennas aren't strong enough to cause thermal problems, engineers say, and carriers are installing some smaller antennas with lower power levels. But some are being made stronger to meet demand for high-speed Internet access, high-definition video and other services. A German study in 2013 found higher emissions from 4G antennas.

"The more bandwidth, the hotter they will be," said Mr. Wessel, who expects some to exceed the thermal level within a year.

Richard Tell, a Nevada engineer, also expects some emissions to rise. At more than 1,000 sites nationally, he found roughly one in 10 out of compliance, similar to Mr. Wessel's conclusion. Some are hidden or disguised for aesthetic reasons.

"I've been on rooftops looking for antennas and couldn't find them because they were hidden in fake concrete blocks that were really foam," he said.

Daniel Ranahan, a Lowell, Mass., roofer, said antennas are slowing jobs. "There's no mechanism for the worker to know what buildings are safe," he said.

Peter Chaney, the director of safety and health for the Mechanical Contractors

Association of America, which represents companies with more than 270,000 workers, in August asked the FCC to create a database of cellular antennas.

One company, RF Check, in San Diego, has designed a protocol but requires collaboration from carriers and funding from phone customers.

Mr. Chaney is developing a training video and brochure on RF safety to distribute to the association's members next year.

"We want workers to know that the antennas are there and that there may be a potential hazard," he said. "I'm concerned about the chronic effect of this. If guys have 30-year careers and they're exposed to these things on a regular basis -- is there any long-term effect?"

The National Institute for Occupational Safety and Health began studying that question after the World Health Organization in 2011 categorized RF radiation as a possible carcinogen, based on research by over 30 scientists, said Gregory Lotz, the top RF expert for Niosh. And the National Toxicology Program at the National Institutes of Health is exploring lower-level RF exposure.

Among those concerned is Gilbert Amelio, a scientist who was chief executive of Apple Inc. and National Semiconductor and a board member of AT&T Inc. He believes industry leaders will "take whatever steps may be necessary to prevent harm to workers or others who may have good reason to be close to these sites."

Jimmy Crespo complained to federal labor regulators in 2011 that he became disabled with cognitive issues after working more than 300 times on heating and cooling systems for antennas for Johnson Controls Inc., a Sprint Corp. contractor.

"I had no training, no monitoring devices and no warning from my employer," Mr. Crespo said.

Regulators asked Johnson to ensure the rules were being followed. Johnson said it no longer had the contract, and Sprint said the systems were a safe distance from antennas.

"Employees were not working in an area where radio frequencies would pose a hazard," a Johnson spokesman said.

Sprint said annual checks show all sites are compliant.

AT&T said it places "the utmost importance on the safety of workers and the public from RF emissions and we have a rigorous safety program in place to minimize exposure to RF emissions."

The FCC in April signed a consent decree with Verizon Communications Inc. to settle RF violations in Pennsylvania and Connecticut, involving an unlocked rooftop and a missing sign. Verizon agreed to pay \$50,000 and to train employees and contractors, and check other sites.

The carrier has told regulators that property owners complicate compliance.

"In New York City, condominium tenants became upset and concerned with RF notification signs we placed on a terrace access point," Tamara Preiss, Verizon's vice president of federal regulatory affairs, wrote to the FCC in February. Ms. Preiss said the signs were removed after the tenants hired a lawyer.

Hartford Financial Services Group Inc. and A.M. Best Co., the insurance-rating agency, have flagged RF as an emerging risk. Swiss Re wrote in a 2013 report that if RF radiation is linked to health problems it "could ultimately lead to large losses."

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