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Do we need warnings on Wi-Fi?

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It's everywhere. The electrosmog of radiofrequencies, electromagnetic radiation and all the Wi-Fi glory that keeps our world humming along. It's not just pulsing from our digital products, but ever-present, in ever- increasing levels, moving faster, farther and stronger with each passing year.

What could possibly be the harm in that?

A few lawmakers in Salem are choosing to err on the side of caution. Three bills in the Oregon Legislature would lay down new rules to better inform Oregonians about the radiofrequencies from these devices and help limit their exposure to children in schools.

State Sen. Laurie Monnes Anderson (D-Gresham), along with Reps. Alissa Keny-Guyer (D-Portland) and Carla Piluso (D-Gresham), have sponsored Senate Bill 283, which would require the Oregon Department of Education and public and private schools to distribute information about the potential health risks of wireless network technology. The information would have to be distributed to employees, students and parents or guardians of students.

The bill also directs the Oregon Health Authority, or OHA, to examine peer-reviewed, independently funded studies on the effects of exposure to microwave radiation in schools and similar environments, particularly exposure that results from the use of wireless network technologies. The OHA would then use that information to create guidelines for school events that outline the hazards of exposure to microwave radiation and how to use wireless devices more safely to reduce risk.

"I strongly believe we need to start the discussion on possible health risks associated with digital devices and their use in schools," Monnes Anderson told Street Roots.

The state senator referenced a report from Kaiser Foundation Research Institute on the evidence of health risks linked to electromagnetic field exposure.

The study, published in the journal Scientific Reports in 2017, showed that exposing pregnant women to non-ionizing radiation from magnetic fields at the higher end of an otherwise normal spectrum resulted in a significantly higher rate of miscarriage.

Two other bills introduced in the state Senate by Monnes Anderson – Senate Bills 281 and 282 – would require digital product manufacturers to label their products with information

about any health risks and direct the state Department of Education and the Oregon Health Authority to conduct a study to determine health standards to govern student use of computers, mobile digital devices and other electronic media in classrooms. Senate Bill 282 also calls for developing policies that would allow a parent to give or deny consent for their child to participate in school course work that involves extensive work with these digital devices and electronic media, and offer alternatives.

Among the possible health risks to be labeled in SB 281 are addictions, microwave sickness, and dangers specific to children and pregnant women.

These bills mark a milestone in the debate about the safety and risks associated with wireless technology – a debate that at its extremes swings from allegations of incomplete or flawed science to willful negligence and corporate cover-ups. But at the very least, the three bills before the state Legislature raise the question of how much we really know about the ever-increasing electromagnetic radiofrequencies that we can't seem to live without.

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The man behind the bill is no stranger to controversy on the matter. David Morrison, a Portland book dealer, has been fighting for greater recognition of the impact of radiofrequency emissions on children ever since a tower was installed at his daughter's middle school. Morrison sued Portland Public Schools in 2011, seeking to have the equipment removed. That lawsuit was dismissed in federal court by U.S. District Judge Michael Mosman, who ruled that the suit was challenging safety standards set by the Federal Communications Commission and that only the FCC has the authority to hear complaints regarding its rules. Portland Public Schools maintained that the radiation levels emitted from the Wi-Fi equipment were below federal standards.

Morrison said this is the third time he's tried to have this legislation introduced, and he hopes it will ultimately mean that internet connections in schools will be hard-wired and cordless phones and other wireless devices will be removed from classrooms.

"I am happy with the bill, but of course not happy until wireless tech is out of the schools, as it is in many countries throughout the world," Morrison said. But, he said, the influence of corporate donations, federal backing of tech companies and public opinion are working against him.

Deb Mayer said she authored the other two bills on labeling and allowing parents to opt their children out of digital-laden coursework. Mayer is with Parents Across America Oregon, the state chapter for the national organization that works to improve conditions in public schools.

“While product manufacturers already instruct consumers of safer ways to use the devices, it is buried so deep within the product that most people don’t know it exists,” Mayer said. “We’re just asking them to make warning labels visible, list the possible health effects, and make age recommendations. … We’re asking that schools determine devices are safe before requiring our children to use them.”

Mayer said the bills have already brought out a vitriolic response from people.

“People love their cellphones and other screens and don’t want to believe there is a downside to them. They tend to ignore the message and attack the messenger. Personally, I have nothing to gain by taking on this issue, but to ignore the environmental welfare of our children at school is unconscionable. Too much is at stake.”

The Oregon Department of Education is neutral on the bills, said Marc Seigel, ODE communications director. Seigel told Street Roots that the department “does not distribute any information about cell towers to the districts, nor does ODE collect data on their emissions.”

Portland Public Schools receives money from leases with AT&T and T-Mobile for six cell towers at Beaumont Middle School, Grant High School, Green Thumb, Alliance High School/Meek Campus, Rigler Elementary School and Roosevelt High School. It does not monitor or receive information on the radiofrequency emissions from these towers, according to PPS public records officer Ryan Vandehey. Vandehey said PPS believes is up to the carriers to monitor the emissions. Wi-Fi is provided in all PPS buildings through a network of routers.

Eileen Park with the mayor’s office said the city of Portland doesn’t monitor the emissions from the 118 wireless facilities on utility poles in the city’s right-of-way, and it doesn’t know how much is being emitted.

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Kaiser Foundation’s 2017 study, as reported in Scientific Reports, concluded pregnant women exposed to wireless radiation at the higher levels present in the real world experienced a rate of miscarriages nearly three times higher than the general population. According to the study, which concluded that “accurate measurement of MF (magnetic frequency) exposure is vital for examining health effects,” exposure “could have adverse biological impacts on human health.”

The American Cancer Society says there is very little evidence to support the idea that cell tower emissions cause health issues and cancer. But it also says very few studies have focused specifically on cellular phone towers and cancer risks. What studies it does reference show no demonstrative correlation.

In 2011, the World Health Organization's Interagency for Research on Cancer classified radiofrequency electromagnetic fields from cellphones as a "possible human carcinogen." That designation was based on a specific increased risk to glioma, a malignant type of brain cancer, and still falls short of meeting the more significant "probable human carcinogen" designation. More recently, a study published in November by the federal National Toxicology Program showed high exposure to radiofrequency radiation caused cancer in male rats. But applying those results to human implications is problematic, and cellphones are placed next to our bodies, while radiofrequency emissions are all around us.

The Kaiser report also references a year-long project by the National Institute for Environmental Health Sciences, conducted by the National Toxicology Program, that also showed an increased risk of cancer associated with Wi-Fi radiation exposure.

The National Toxicology Program, or NTP, investigation is reportedly one of the more comprehensive studies on the issue. The study, which lasted more than 10 years, concluded that "there is clear evidence that male rats exposed to high levels of radiofrequency radiation like that used in 2G and 3G cellphones developed cancerous heart tumors."

The NTP notes the results cannot be directly compared to the exposure that humans experience using a cellphone because of the higher levels of radiation involved, compared to normal cellphone use. The study did not investigate the next generation in wireless technology, or 5G.

Regarding the proposed legislation, Monnes Anderson points to the warning Deustche Telekom – the owner of T-Mobile – puts on its Speedport Smart home Wi-Fi router. The passage, in German in the operating instructions, cautions owners from placing their Speedport routers "in the immediate proximity to bedrooms, children's rooms, living rooms (means also common rooms or lounges, i.e.) in order to keep the exposure to electromagnetic fields as low as possible."

"There are so many advantages of using Wi-Fi but we have a responsibility to discuss this topic, to make sure we are not exposing our children to undue harm, make school districts aware of the issue, and encourage the industry to do more research," Monnes Anderson said.

In 2015, the French National Assembly voted to limit public exposure to electromagnetic fields generated by wireless technology. The French law bans Wi-Fi and wireless devices from "the spaces dedicated to home, rest and activities of children under 3 years old."

In 2014, Belgium banned the sale of cellphones to children 7 and younger as a safety precaution. In Spain, various parliaments and municipalities have also passed resolutions aimed to limit electromagnetic exposure to young children. Other countries, including

Australia, New Zealand and Canada, have either passed or are researching related policies to curtail the proliferation of these products among children.

There is no federally developed national standard for safe levels of exposure to radiofrequency energy in the United States, according to the FCC. The FCC does, however, set safe exposure levels for all wireless communication devices based on the absorption rates into the body, which vary according to products.

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Ready or not, 5G is coming to a neighborhood near you. It's been billed as being 100 times faster than the current 4G technology, but it also will rely on a new network of antennas and significantly higher frequency spectrum bands called millimeter wave frequencies. Reports on this impending network have said the frequencies are higher, but they also have a shorter range. The shorter range means more antennas, closer together – as many as 300,000 more antennas across the country, according to a report by CBS.

For years in the ramp-up to 5G, doctors have been outspoken against its implementation without more investigation into its impact. A group of more than 180 scientists and doctors from 35 countries have appealed to the European Union to place moratorium on the 5G roll-out across Europe "until potential hazards for human health and the environment have been fully investigated by scientists independent from industry." The signees say 5G will substantially increase exposure to radiofrequency electromagnetic fields on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. "(Radiofrequency – electromagnetic frequency) has been proven to be harmful for humans and the environment," the doctors state in their appeal.

The FCC authorizes and licenses devices, transmitters and facilities that generate radiofrequency radiation and has jurisdiction over all transmitting services in the U.S. except those specifically operated by the federal government. It does not, however, have jurisdiction over health and safety issues.

The FCC says that the radiofrequency emissions from antennas used for cell transmissions are at exposures that are well below safety limits and that there is no reason to believe that such towers could constitute a potential health hazard to nearby residents or students. When it comes to cellphones in particular, the jurisdiction for determining safety falls with the Food and Drug Administration. On its website, the FDA has said that it cannot rule out the possibility of risk but that the risk is probably small.

The FCC, in its campaign to "ensure the United States wins the global race to 5G," has passed new rules to streamline the installation of 5G, "small cell" infrastructure by overriding state and local regulatory barriers. The rules, approved Sept. 26, 2018, mandate time limits for

state and local reviews, and in some cases waive fees if the FCC deems them barriers to deploying service. And numerous states have followed suit, enacting legislation to further nullify local control and streamline the implementation of 5G networks. Oregon is not one of those states.

The U.S. Conference of Mayors has repeatedly protested the FCC's order on 5G, calling it "an unprecedented federal intrusion into local (and state) government property rights that will have substantial and continuing adverse impacts on cities and their taxpayers, including reduced funding for essential local government services, and needlessly introduce increased risk of right of way and other public safety hazards."

Multiple cities, including Portland, have protested the ruling and threatened to sue the FCC.

**An earlier version of this story incorrectly referred to the tower emissions as "radioactive." The term "radiation" in relation to electromagnetic radiation and radiofrequencies does not mean radioactive.*

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