Dirty Electricity: Electrification and the Diseases of Civilization:
A Special Interview With Dr. Sam Milham

By Dr. Joseph Mercola

JM: Dr. Joseph Mercola
SM: Dr. Sam Milham

JM: It's likely you may not realize that a large percentage of the diseases that we face in modern civilization is related to an artifact of electricity. Hi, this is Dr. Mercola, helping you take control of your health. Today we are joined by Sam Milham, who is really a pioneer in the understanding of what's conventionally called "dirty electricity." In fact, he wrote a book by that title. But I think a more precise definition would be EMI, or electromagnetic interference.

Dr. Milham is a medical doctor (M.D.) and an epidemiologist. Actually, that was an area of pursuit that I had considered following, but decided to just go straight to my family practice residency. But he's done decades and decades of pioneering research. In his book, which is pretty much an autobiography of sorts, he details and discusses the extensive journey he took to help uncover this link between this artifact of electrical distribution, this dirty electricity and its connection to so many diseases.

We'll discuss also how this impacts at the core, the foundation, which we're coming to appreciate, of really of all disease, which is mitochondrial function. Welcome and thank you for joining us today, Dr. Milham.

SM: My pleasure.

JM: You actually attended the Albany New York Medical School. Is that correct?

SM: Yes.

JM: Yeah. That's where you got your [medical degree]. You went to your undergraduate there too. You had quite a bit of a journey. You've got your MPH, your masters of public health, at Johns Hopkins. Then you became board-certified in public health, then went to Washington, Hawaii, I believe, and then came back to the States. Perhaps you can summarize your journey and the process, which you tell quite a bit in your book, but I think our viewers would be really interested in your background to place this into a context of what we're going to discuss.

SM: I really got interested in medicine way back in college. I went to Union College in Schenectady, New York. I had a job while working in the weekends. I ran a lab for a small catholic hospital. I got to see and draw blood from patients, start intravenous drips (IVs) and hang around the pathologists and learn about disease. The thing that struck me was I was more interested in why they were there than what to do once they got there.

After medical school, it's kind of an accident that I got into epidemiology. When I showed up for my internship at the U.S. Public Health Service in Massachusetts, almost all the residencies were spoken for already. One that was open was epidemiology, so I took it. I've never regretted it for a second. I was also interested in the science of disease. That's how I got started.

JM: Thank you for that historical perspective. How old are you now?

SM: I'll be 85 on May 12.

JM: Well, congratulations. It's very clear from our brief conversation that your brain is working the way it was designed to, that you are not impaired by many of the degenerative diseases that impact so many people at that age, where you can see it very clearly in their speech patterns. But your brain seems to be working pretty well. I suspect, for a good part, because you've been avoiding this artifact of dirty electricity.

Let's talk about dirty electricity. How is it generated? What is it specifically?

SM: Okay. Electric grid began with Edison in 1892 at the Pearl Street Generating Station. It turns out that from the very second he started generating electricity, he was making dirty electricity. The way I know that is because if you read his – He's got tons of publications. He had a big problem with his original generators, his big jumbos. They had brush arcing. The way they make electricity is they spin magnets that had brushes to pick up their contact points. All electric motors have brushes. Generators have them. They're made out of graphite.

He tried to solve the problem by dumping mercury into these motors or these generators, but that made quite everybody sick. Just by the fact that he had this extensive brush arcing – I know that his original electricity from then until now has suffered from some sort of brush arcing.

Arcing and sparking makes dirty electricity, which are really high-frequency electric transits. They come and go. They're spikey. They have very short latency times. From the outset of the grid, we're being exposed to this business. It's not the 60-cycle stuff. We're talking of frequencies up in the kilohertz and higher frequencies, thousands of cycles a second.

JM: Is it actually going to the megahertz range or does it stop at the high kilohertz?

SM: All the way. I think it goes higher. But it seems the kilohertz range is what really is making us sick.

JM: Yeah. Just so you know, if you currently have photovoltaic panels or solar panels in your home in an effort to generate clean electricity – I've had ones. I've had 15 kilowatts of panels for the last five years. That's great. But what you probably don't understand is that those photovoltaic panels generate direct current (DC) current, which is essentially unusable in most homes. What you need to do is use an inverter that converts it to alternating current (AC) current. This is a phenomenal source of dirty electricity.

If you have solar panels or you know someone that does, you need to let them listen to this interview and understand that they need to remediate it. I remediated mine and tested it. It's fine now. But it will cause dirty electricity, which will cause problems.

SM: Yeah. The other problem with that are the big commercial solar arrays. They have inverters, thousands of them if they're big arrays. They all make dirty electricity. If your utility has got an appreciable wind or solar component, it's, by definition, giving you dirty electricity.

JM: Wow. That's a very good point. I hadn't considered the commercial aspect. There are islands, entire islands that are being generated by solar electricity. Kauai, which is of course one of the U.S. states or a subsection of the U.S. states of the Hawaiian Islands, is planning within the next 10 or 20 years to have their entire island be generated. They've got a few hundred mega-watt systems that are out there now, generating a significant portion. They store it in the batteries.

But you're right. It has to be converted. You could store it as DC current in the batteries, but ultimately, that's useless in our current system. It didn't have to be, but we chose to operate on AC currents. If we didn't have that inner conversion, it wouldn't be an issue. This is a big issue if you have solar panels or your utility is generating electricity through the use of either wind or solar. Thank you for that elaboration.

SM: I have a little bit of an anecdote when I first discovered this business. I went online. I studied and looked up commercial sources of photovoltaic inverters, the companies that sell these. I found this wonderful statement at the end of less than a thousand of these things that they're selling. They said that all, A-L-L, all photovoltaic inverters create amplitude modulation (AM) radio interference. What does that tell you? It says it's all dirty.

JM: Yeah. We're talking about dirty electricity. But as I said earlier, the other term is EMI or electromagnetic interference, which is a more precise definition. Dirty is sort of a lay term. But that's what it is. It's electromagnetic interference. The classic example is this AM radio wave transmission interruption. Why should we be concerned about EMI in our homes? What does it matter? What's the big deal?

SM: The big deal is that over the 50 or 40 years I've been doing this business, it's become super clear that EMI or dirty electricity is very biologically active. I wrote the book to basically warn the population because nobody seemed to pay attention to it. This is the major cause of all the so-called diseases of civilization. We're talking everything – cardiovascular disease, all the cancers, and even suicide, which really caught my eye. When I looked at the causes of death in this country, the only cause that wasn't linked to it was auto accidents, basically.

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JM: I'm sure that it's a contribution. I'm actually becoming passionate about this. I've known about dirty electricity or EMI for a decade or longer, maybe two decades, but I've never really fully appreciated the impact it had until I read your book. The light started to kick on. For the last year or so, I've been immersing myself in the literature of mitochondrial function. I think that's the way that it impacts its effects. Ultimately, it's mediated through some component.

I do believe there's other variables that contribute to diseases that you've mentioned that can't be overlooked, such as the processing of food, this food selection, the contamination with toxins like glyphosate.

There are other types of non-native electromagnetic frequencies (EMF) exposure that I think is important to ground people on. There are basically three. One is magnetic, which this is not. The other's electrical, which is what this is, EMI. The third is microwaves, which is not your microwave oven necessarily, although that is a form. But it really is the communication with the cellphones, routers and your portable phones. Those are all three. What we're talking [about] today is about the electrical component. All of them contribute to it. I think they have probably similar mechanisms.

I was reading a research paper today, actually. I don't know if you've encountered this before, . but some of the speculation is that – I'll let you talk about it first, but I'll talk about some of the biological mechanisms – these peaks, these electromagnetic interference within your circuits actually extends out. How far? Six, 10 or 20 feet? It resonates with your biology. That activates the biological changes.

SM: Look. As long as you're talking about inverters, you go into micro waste – All transmitters, AM, frequency modulation (FM) and especially cell towers. Your cellphone works because there's a transmitter out there that transmits to you. They all run on DC. Every cell tower in the world has a huge inverter in it to make the DC to run the transmitter and also to charge the backup batteries. They make dirty electricity by the ton.

Lots of schools have cell towers on campus. What they're doing is they're bathing the kids. It gets back into the wires, the lot wires and power wires that service it. The grid becomes an antenna for all this dirty electricity. It extends miles downstream. The way you can get a distance figure is there's a clever study done in Brazil where they looked at deaths from cancer [and] distance of residence from the base of the cell tower. They got effects out there to 500 meters. That's 1,500 feet. I'll tell you, the cell tower can't talk that far. It's the dirty electricity – the EMI in the grid, in the wires running into your house, through the ground and through your power cords – that's doing it.

JM: Okay. Obviously it needs to connect to your biology in some way. It does that when it's on a circuit. Because, say, you had a solar panel in your house. Not all the circuits will be hooked up to that, only the circuits that are hooked up to that inverter are going to be influenced by this. Actually, if you have solar panels, this isn't an issue at night because there's no sun. It's not going to generate this interference. But once it's generated, how far away do you have to be from that wire to actually resonate with that frequency and have it transmitted into your body?

SM: Actually, you can be quite far from it. I studied this in a condo I owned in California, which was built on a slab. Let's back up a little bit. About three years ago, Martin Graham – Professor Graham recently died a couple of years ago – and Dave Stetzer, who basically pioneered and studied this whole field and trained me. He got me started with a small grant.

He sent me an off-the-shelf fluke multimeter, which measures volts, amps and ohms. He showed me how to use it to measure current in my body. That's been a mindblower. In fact, I've got two papers in press now that look at it. I put an electrocardiogram (EKG) patch on my chest for one lead of the thing and the other thing goes to an outlet ground or tube ground, like drive a stake to the ground. It measures the current that's in my body. I find that just walking on the pavement in an area, I could get very, very high, probably carcinogenic fields of current in my body.

JM: What types of voltages are you experiencing or you're measuring?

SM: We're talking millivolts.

JM: Millivolts.

SM: But we're also talking microamps. Electric Power Research Institute (EPRI) and their people have written extensively on contact currents. National Institutes of Health (NIHS) has studied this years ago. They concluded that 18 microamps is sufficient to put enough voltage in your body to give you cancer with a chronic exposure. Hell, I find 200 to 300 microamps in lots of places just standing on the floor.

JM: That fluke multimeter is able to measure that for you? All you do is hook it up to the EKG electrode anywhere on your body?

SM: Exactly. But what I do is – I got tired of ripping the hair off my chest with the EKG, so I just stick it in my mouth.

JM: Okay. One of the leads on the fluke multimeter?

SM: Yeah. Right. The other one goes into –

JM: Goes into the ground.

SM: Right.

JM: Electrical ground. You're fine.

SM: Right.

JM: You measure microamps and millivolts.

SM: Microamps coursing through my body. What the real mindblower was when I got it. I was sitting at a Hewlett-Packard laptop and I was measuring myself. I just touched the case of the laptop and found out it was putting in 80 microamps into my body. I finally got rid of it by putting a USB to an outlet ground. That fixes it. You can buy those if you find out yours is baked. The other horrendous problems –

JM: Many of the notebooks, if they have power supplies that are grounded, that tends to solve the problem too. A lot of them are. I think the Apples are not grounded.

SM: This one isn't grounded. But when I ground it, it's fine. But the other thing I noticed is that almost all non-incandescent lighting puts the current into your body just directly from the light.

JM: Really?

SM: Absolutely.

JM: You've measured that on the fluke?

SM: Absolutely.

JM: It's not surprising because we've had a physician, Dr. Alexander Wunsch, who is a German photobiologist who goes into it just from a biological light perspective. But I didn't realize that it had electrical implications also. That's interesting.

SM: It just explains a ton. I started doing occupational mortality stuff 30 years ago. My contribution is still online. You can look at Washington State mortality for every cause and every occupation. I was almost puzzled why the highest cancer rates of all the occupations are teachers, professors and office workers. Why is melanoma more common in people who work indoors than outdoors? Why is it more common in teachers and professors than it is in lifeguards or farmers? Why do you get it on parts of your body that never see the sun? It's due to this. It's due to EMF, as I've been measuring in schools and colleges. I'm telling you there's just no place to hide.

JM: Let me just get a little bit of clarification because EMF would also include healthy biological sunlight. There are healthy EMFs. This is nonnative artificial EMFs that are the source of the problem.

But what I'd like you to go on is describe some of the research that you did, some of the pioneering work, especially in, I believe, the California school system where you were called out to find out a series of, I believe, 13 teachers who had contracted cancer and the reluctance that you encountered from the school board and the system there that didn't want your input. It didn't want your help at all. It was actually the teachers themselves pleading with you to help them solve this issue. And then how you discovered that male breast cancer is actually a sentinel for EMF exposure, just like mesothelioma is a sentinel for asbestos exposure.

SM: That's true. I can't make anybody believe it. In fact, in the second edition of my book I comment willfully that there's an epidemic of male breast cancer in Camp Lejeune in the Marine Corps. I wrote to them and said, "Hey. Look at these 15 studies that link EMF to this." They were saying it was due to the drinking water contamination. There's no way. It's due to EMF for sure. They just ignored me.

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In fact, they got federal money to take the stain out of their problems. It just boggles my mind how politics, money and greed can overwhelm everything.

JM: Well, your experience in the California school system was quite a powerful anecdotal illustration of that. I'm wondering if you could expand on it now and share that with our viewers.

SM: Right after I moved down there, there was an article in The Desert Sun paper. It's published in Palm Springs. Teachers had told their school system that they were certain that they had an epidemic of cancer in the La Quinta Middle School. The teachers are smart. They knew teachers at other schools. They recognized that 13 of them had developed cancer. They didn't know another school in the whole system with more than two or three. They complained to the superintendent of the school. She hired a guy from the local cancer institute, who came and spent two hours telling them what was on their head that it was due to sunshine.

When I read the article, I went to my computer and looked at how big the school was, I knew right away that they were right. They had a beef. I tried for about four of five months to contact the school. I kept writing but I got no answers. Finally, I went to the superintendent and she said, "Well, we're satisfied with our expert advice from the guy working there."

JM: The utility company.

SM: Basically. Might as well be a utility company. I went to the newspaper and told them, "Hey, look. Here's my name and phone number. If the teachers and the rest agree, I'll take a look at this with them." I did that. But basically, we did get into the school just two consecutive nights. Shortly after that, I was accused of criminal trespass by the school district. They didn't want me in there.

Just like pulled teeth, we got the study done without any help from the school. They could have helped us by giving us teachers' rosters and stuff. We did it all just with the teachers' help and with some classroom assignment rosters that one of the teachers had saved. The real proof of the putting is that it's been out there for nearly 10 years. Nobody's been able to shoot it down.

JM: When you say out there, you mean public and peer-reviewed scientific journals.

SM: Yeah. America's Journal of Industrial Medicine. The other thing about it that's so right on and unbelievable is we only had 18 total cancers when we were done, but three of them had [inaudible 23:17] about 10, which you almost never see with just power frequencies. You get twos and threes. The three cancers that we found that were high in these teachers were identically elevated in the big California's teachers' association study. That can't happen by chance.

I contacted the teachers' association. They stonewalled me too. I did another school. I tried to do another school that had a cell tower on campus and an epidemic of mostly breast cancer in the staff. Once again, they hired like a Caiaphas to come to a school board meeting and try to shoot down my stuff. They wouldn't cooperate so what are you going to do? You can lead these people to water but you can't make them drink.

JM: Yeah. Those of you who aren't familiar with the science of epidemiology, there couldn't be a better suited scientific discipline to evaluate this, because they really carefully study populations and statistics and see if there's any significant correlation or connection to these causal factors. This is the type of scientist that you want evaluating. It's really somewhat incredulous but not unreasonable to find out that there's been this rejection of this type of work because of the influence of the traditional industries that would be impaired by accepting this type of approach and really ascribing any health damage to exposure to these types of fields.

There's a strong negative incentive against spreading this type of information. But what intrigued me too is that when you did your initial analysis – as a scientist, you're going to do some historical review first. When you studied the literature, you found a pretty strong correlation with electrification and mortality with some adult cancers, including female breast cancer. It dates back to the '30s or '40s. We're talking 70 to 80 years ago. Maybe you can elaborate on that.

SM: Actually, it dates back to 1900. I was amazed. If you look at longevity, what happened in this country was really unusual. It was so big and the electrification was so expensive – wired generators etc. – that Edison had this great idea. By the turn of the century, almost all the big cities in the world had electricity. The rural areas in this country didn't finally catch up to the cities until mid-'50s.

You had half a century with two huge populations covered by a good vital record system – deaths, births etc. One was exposed to electricity and the other wasn't. If you compare those two, there are two populations. The differences are just amazing. At the turn of the century, if you lived in New York City or most of the other cities in the country, your longevity, the average life expectancy, was low-50s. If you're Amish and didn't use electricity or if you lived out in the [inaudible 26:39] like rural Mississippi or rural New York State, for that matter, your longevity was up in the 70s.

Fast forward to 1930s, well actually even in the '20s, I found in one of the vital statistic books, one of the guys who put together the deaths, all the deaths in the U.S.A., noticed that the urban cancer excess was 50 to 80 percent higher than the rural cancer mortality. That's just – wow. That's enough to blow your mind. It's eternally consistent. There's something going on since Edison.

JM: That's one of your skill sets. It's that you can look through these data sets and extract this type of information that wasn't really well-known because no one was looking for it. Why would they think to even look for an association between electrical use and mortality or these types of diseases? But you did that. You analyzed it and you came up with these results. You published that.

SM: That's why I wrote the book. I wanted to look at standard childhood leukemia. That's a great disease to study because the peak incidences aged 2 and 3, if they're going to die – in the old days, they all died – you had good access, a good diagnosis. It's a hard diagnosis to miss in a small kid. Just do a blood test in a finger stick and you have it.

When I got into looking [at] the national data set, I was astonished. It wasn't just leukemia. It was all the cancers. It was cardiovascular disease and suicide. Suicide data is just beautiful. You can just see this electrification preceded [it]. Thank god the census in 20, 30 or 40, they ask whether the house is hooked to the grid. If you look at that state by state or farm by farm, you could track electrification. The cancer rates, the so-called diseases of civilization rates just parallel electrification chapter and verse. It's a striking data.

I'll tell you what, it's getting worse. Right now, it's getting worse in this country compared to other countries because of ground currents. The grid in this country is called the grounded white grid. In New York, they don't have it. It was designed for lightning protection etc. But now, about 80 percent of the current that's delivered to loads, to your house, to your business, returns to the substations via the earth. Now, they have four ground contacts per mile when there used to be one. Every transformer I've checked has got a wire running from the center tap with the ground transformer to the ground.

The dairy farmers were first to pick this up. They picked it up in the '70s. They noticed their cows were dying, weren't giving milk and wouldn't reproduce. It turns out that this big old BACI (Before-after control-impact) is a wonderful canary in the coal mine for EMF.

Stetzer, Graham and others did a wonderful study. They parsed out what parts of the EMF spectrum are impacting milk production in the cow. They measured milk every day or every other day in cow and how much she makes. They know, to the pound, her milk production and her health, if she's got mastitis or whatever else, her post-production. They do cell-counts in milk.

They published a wonderful paper shown which harmonics, multiples of 60, are the bad ones and how the transients affect the milk production. We got good animal work. You don't have to use rats. You've got big cow work. He had it for 60 years and it's getting worse.

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The Amish are just a wonderful control group. I just read a paper. This is another mindblower. There's another sect, the Hutterites. They have all the habits of the Amish, except they use industrial electricity. In a study with some asthma, people noticed that the Amish kids don't get asthma. That's amazing. The Hutterites get it. Why? The Hutterites have electricity, the Amish don't. There's the answer right there.

I read this in journals. They won't publish it. Stetzer and his friends cleaned up a school in Wisconsin. Thirty-seven of the kids who used inhalers for asthma tossed them away. Only three still needed the inhalers.

[CUT 31:53 to 32:29]

~~**JM:** Thank you for sharing the information about how most U.S. utilities actually insert the ground wire into the ground. Could you tell us how far that goes out? Some of the implications on this are that we are a big promoter of grounding. If we didn't have this electrical utility electromagnetic interference, it wouldn't be an issue, but it is for many people. When you ground~~

to the ground, you're actually getting this dirty electricity into your system. Is there a way that you could measure with some type of meter that this is present in the ground?

SM: Absolutely. When the earthing fad came out, I got calls from people saying, "Hey. I bought an earthing blanket. God, I don't feel good. I get sick." I got one from people that sell them. Dave Stetzer happened to be visiting here. We got our equipment out and we hooked it up according to the earthing manual. We used an outlet ground. We also used a true ground. I ran a wire from outside to a stake. We showed that all the garbage that's in the ground gets into you if you use the blanket. We compared what you get with the primary neutral to earth. I went to the corner transformer. The earth there was what exactly was coming into my house, going into the windows, through the wire.

JM: How do you measure that? Because, typically, with these meters, you plug them into the outlet. Obviously you can't plug them into the earth.

SM: No. We use a solar scope. We actually got the wave forms.

JM: Okay.

SM: We just can see the garbage. When you're talking about Mother Nature, let's face it, when the planet cools down, we're exposed to magnetic fields from the earth's core. It's a static field. We had the Schumann resonances from lightning bouncing off the Van Allen belt. We have frictional electricity. That's it. We've got cosmic rays coming in from space.

All the other stuff that we're exposed to now increasingly is manmade. What's happened in the last 50 or 20 years that really kills us, besides the microwaves is – This is a big one. They discovered that the only electric motors of earth, like [inaudible 35:05] fans, had on and off switch or a high-medium-low. Now, they use little electronic doodads called variable frequency drives (VFD). You put them into small motors, huge motors and they all crop up the electricity.

JM: Interesting.

SM: They put out terrible stuff. In fact, we've got a paper. We studied a cluster of ocular melanoma, a really rare eye cancer in North Carolina. I'm positive that it was caused by a variable frequency drive from a natural gas pumping and purification station.

Right now, my friend Dave Stetzer, he and his wife had to move out of their house because they live in Wisconsin where they mine this fracking sand. When they put VFDs on the big motors that run the process – he's 8 miles from the thing that drove him out of his house – he noticed that the fans in his house, on his stove were oscillating with frequency. He got his oscilloscope out and measured it. It has broken his air conditioner, his hi-fi, his wife gets tachycardia, and he gets sick to his stomach, since living in the cabin.

A **JM:** Let's get back to the grounding because I think it's an important point. I think there's a lot of biological benefit if you get healthy grounding.

SM: No. You can't get healthy grounding in this country. Period.

JM: Let me explore that with you because I'm wondering if there are remediation efforts that can clean up this. That typically consists of these filters or capacitors that fill throughout these peaks. If you had your circuit that was cleaned through this remediation, could you plug in to that and get clean grounding?

SM: No. I don't think so.

JM: Why is that? If you're not measuring any electromagnetical interference, why wouldn't you be able to?

SM: I carried my [multimeter] with me up on a cascade cross trail. Wherever I look, I find stuff in the ground. There's an island of pewter sand out here. Indians own it. It's never been electrified. I go out there and I find in the island, out in the water, I find bad stuff. I suppose if you built yourself a Faraday cage — I just don't think there's a safe way of grounding in this country.

JM: Even if you cleaned it up with these capacitors?

SM: The capacitors just clean up certain frequencies. They're not a broadband cleanup. They clean up [inaudible 38:00].

JM: Okay. Where are these other frequencies ranging?

SM: Above and below.

JM: Okay. These are the same types of abnormal non-biological frequencies generated by what we discussed earlier? These sources?

SM: Absolutely.

JM: Okay. That's an interesting component. But if you were in a Faraday cage — I actually sleep in a Faraday cage to protect myself from microwave radiation.

SM: I don't know. With the fluorescent light, I proved to myself what was coming straight off the lamps.

JM: Yeah. I don't doubt it.

SM: I took a wire mesh and I shuttered a ground wire to it so I could protect myself. Actually, a guy named John Ott studied kids in a Florida school way back in the '50s. The kids had attention deficit hyperactivity disorder (ADHD). He knew it had something to do with the fluorescent lighting. What he did was he put a wire mesh grid in front of the lights and grounded it. That could protect the kids. I don't think he knew exactly what he was protecting them from, but he

did it. It worked. *Health and Light: The Effects of Natural and Artificial Light on Man and Other Living Things* is the name of this book.

JM: Yes. Great book. He was a major pioneer. I think he lived out in Florida. He certainly worked for Disney. He did a lot of pioneering week.

SM: I read that book all the time.

JM: He's an inspiration to you. That's great.

SM: Absolutely.

JM: We can remediate against these fields. Let me go back to some of the potential biological mechanisms. Because these fields, these aberrant peaks that come out, if you're within a range, which could be fairly significant, it's certainly more than 10 feet, they're going to resonate with your body and then they're going to cause some biological effect.

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I've seen some research where suggested mechanisms of the health consequences are related to the production of a reactive nitrogen species. Not a reactive oxygen species, which is ROS. This is RNS, reactive nitrogen species called perioxynitrate. Are you familiar with that work at all?

SM: I am. But I think you could back up. I think EMF, EMI is a stressor. If you go into this stress literature – in fact we did a study showing that we cleaned up the electrical environment, we reduced the stress hormones. ADHD is caused by – we don't have to get technical for your audience – but I think stress has become a denominator for all this business.

JM: Can you define stress first? Because it has many different meanings.

SM: Psychological stress, physical stress, thermal stress, electrical stress, I think the end points are all the same. You get a fight and flight reaction. Cortisol goes up, the neurotransmitters change.

We've got a paper I wrote on it. We actually went into a library that was really dirty. We measured the neurotransmitters. It showed that once we filtered the place, the neurotransmitter levels changed. There's a wonderful study by Buchner and Eger in Germany. They went into a pristine valley before a cell tower came in. They showed long-term lasting changes in the whole panoply of hormones that they could measure, including stress hormones.

JM: I would say that the vast majority of the public, maybe as high as 95 percent or 90 percent, don't believe this. They don't believe there's any harm or concern here even though you've compiled a lot of good evidence that suggest otherwise. Of those that do, a fairly significant percentage of those populations would understand the dangers of microwave radiation. In fact, even the World Health Organization has categorized it as a class 2B carcinogen, which is possible carcinogen. I'm wondering if you could compare the dangers of the microwave radiation to the dirty electricity, which is a lower frequency.

SM: Let me just remind you and the audience that microwaves began with radar in World War 2. Okay? Radar range, that was the first microwave oven. They called them radar ranges. Heck, back in the early '20s and '30s, before microwaves existed, this stuff was killing us like flies. It's the power frequency. It's the grid. It's all of the dirty electricity from arcing and sparking and all the other junk we put in [our bodies.]

JM: But aren't those two separate entities?

SM: No.

JM: They're the same? They are the same spectrum but there are different frequencies. Is that the case?

SM: Different frequencies, different harmonics. I don't think any unnatural radiation is good for you. Sunlight is good. It gives you vitamin D.

JM: And we have the red and the near infrared, which have many other biological beneficial benefits.

SM: If you wear pink sunglasses, you got sick.

JM: Yeah. If you wear them during the daytime when you're out in the sun. If you wear them at night then it may actually be better than the blue blockers because they also block blue, green and yellow. After the sun goes down, you know we were never exposed to it, because the only light that humans have been exposed to for a million years is really that from fire.

SM: Fire.

JM: Which does not have blue, certainly, and has minimal green and yellow.

SM: Yeah. That's amazing. At 85, I'm not going to be around much more. The utility industry recognized – Thirty years ago, they said that we could fix this country up health-wise and solve the cow problem by putting a fence wire up on the grid to put the neutrals back on the poles and back to the substation. If we could do that, we could have the kind of health pattern that the Amish have. Their cancer rates are 40 percent of ours. There's no ADHD. There's almost no suicide.

JM: It would seem that this is a really important part of the solution for all the new solar installations that are grounded. They need to put this fifth wire out there. There seems to be an important need for some type of campaign to educate this. Because my guess is that it wouldn't be that expensive to install initially. It would certainly be more expensive to retrofit it.

SM: Even after the grid's up, they actually studied this I think in Michigan or Minnesota, the science advisers. They did a dummy run of how much it would cost to put the EMI back into the wires. It came to save like 12 cents for a typical household and increase your electric bill by

under a buck. In a couple of years, they can have the whole state cleaned up. But you know, utilities they're just greedy. They don't want to spend their bucks on –

JM: They're not much different than any other large corporation actually. They're really similar. Between the food industry, the drug industry, they've got many similarities. But many times, their actions can be motivated by educated and informed consumers who actually vote with their pocketbooks, which is a bit more challenging to do with utility because usually you only have one utility service. You can't have a selection of different utility providers where you can with many of the items that we consume, especially food. But I think a coordinated action on educating consumers could influence them. It's actually something I'm intrigued and motivated to do, because this is such a pervasive issue. It's needlessly harming almost all of us.

SM: Every one of us. All of us.

JM: Well you can remediate against it. But you're still going to be in an environment where it's not remediated. I'm sure your home is remediated too, but still, it's only partial. It's not 100 percent.

SM: One of my favorite places is a local farmers market here. Last year, I was horrified to find out that just walking or standing in that place, I was putting 200 microamps of current into my body just by virtue of –

JM: I love this concept because anyone watching this can do this experiment. Can you run it by us again because you said you put one of the electrodes under your tongue to ground it? But where are you going to put the ground if you're at the farmers market?

SM: I've got a long wire that I plug in either to an available plug – the little round thing is the ground plug. I went to the hardware store and I fabricated a plug that just has the ground attached. I plug it in the back. Short of that, I have 30 or 50 feet of wire. I can drive a stake into the ground of the premises. That's a true ground. I compare that to the utility ground and end up pretty close.

JM: You can just stick a stake in the ground and do it that way?

SM: Yeah. When I first went on to a 500-kilovolt line and there are no outlets there, I just drove a stake in the ground and I made measurements of magnetic fields and body current just to see how they compared.

JM: What did you find under that 5 hertz?

SM: They're both high, obviously. No surprise.

JM: How high were they relative to the other?

SM: What I found interesting was that the magnetic field, as you got away from the line, stayed high. It didn't drop off as fast as the body current, which is good news.

JM: Okay. When people measure this, what would be considered a healthy or normal body current?

SM: Body current, you want to keep it under 18 microamps.

JM: 18 microamps?

SM: Microamps.

JM: Microamps. Okay. The higher it is, the worse it is.

SM: Absolutely.

JM: What about the voltage? How many millivolts?

SM: I've done some voltage comparisons. If you're having a solar scope tracing, you can use voltage equals IR. N equals current times resistance. You can assume the resistance of the human being is 500 ohms. If you know the amperage and the resistance, you can figure out the voltage. You can do it the other way. If I take in a [inaudible 49:37] tracing of a place, I might come up with say 100 millivolts. I could multiply that by 500 or double it. That gives me an estimate of what the amperage is, and some are almost as close. The first time I did it, I came out and observed two subdale which were expected at 290 microamps. I know it works.

[-----50:00-----]

JM: Okay. Again, that 270 is significantly higher than the 18 microamps at cell level.

SM: Wow.

JM: Did you ever get into milliamps or that high?

SM: Yes. Unfortunately. Down grounds, in the development right near the school I studied in California. It's not just the school. It's that whole swath of that part of town. There's a boys' and girls' club. There's an elementary school. There's a daycare. They're all off-scale for this. There's a development adjoining to it where there's cancer like every house in that block. I measured the down grounds and the power poles in the backyard. I got the milliamps there.

JM: Wow. You would expect lots of problems. Now, what's more dangerous? The higher amperage or higher voltage? Obviously they're connected to the formulations as well.

SM: I wrote a little letter which hasn't been published yet. I think we've been measuring the wrong thing in all these epistudies for the last 40 years, because I find plenty of places where the body current, amperage in my body is higher than a kite. The gas meters and the other meters that we traditionally use don't show anything.

JM: Well, they're measuring the magnetic field, which is another –

SM: No, no. They measure electric field too.

JM: They do?

SM: They don't have the bandwidth. That's the problem.

JM: Okay. As far as you know, other than sort of rigging this up yourself, there's no commercial device that is designed to measure body fields?

SM: It wasn't designed, but you can buy an off-the-shelf fluke.

JM: Yeah. They're not expensive.

SM: They could go quite through 400 dollars.

JM: Yeah.

SM: It's a multimeter. In fact, Martin Graham got mine off eBay. It had a guy's name on it.

JM: If one wanted one of these meters, what would they be looking for? Does it have to have an output or a section of a wire that would go on the ground?

SM: No. The thing comes with everything you need. All you've got to do is fabricate or take a 12-gauge wire and put a three-prong plug on it, where you only contact the round plug.

JM: To the ground.

SM: That's attached to your black electrode. That's for the ground. The red one goes to your EKG patch on your chest or to your mouth.

JM: Or on your mouth. Perfect. And you're set.

SM: You push a button and read it.

JM: I think you can get them for less than 300 dollars. I think I've seen them around that.

SM: Well, to get the exact one, on my website.

JM: What is your website again?

SM: You just go to Google and type "Sam Milham Dirty Electricity."

JM: Okay.

SM: I've got papers on there. The papers measure contact current showers. People in California are getting sick in their showers. Their implant cardioverters were malfunctioning. I found out that the ground current – when you're wet, you're a lot more conductive. In the shower, when you touch the shower handle, you're getting all the garbage that's running through the ground into your body, which yields measurements that are high.

JM: Have you ever measured your body current when you're under a Faraday cage?

SM: No. I can interrupt it. If I get my hand close to it, I get really high body amperage. If I put a grounded wire screen between me and the light, it goes away.

JM: Yeah. That just blows my mind. I was not aware. I mean I'm a massive proponent for not using fluorescent lights, but for different reasons. I thought it was just the light emitted. I didn't realize that it transferred amperage into your body. I had no idea.

SM: Let me take it one step further. Years ago, I studied a tanning salon. You lay on fluorescent bulbs. That's how the beds work. I got thinking like, "Wow. I'm going to measure my body amperage in one of these." I did. It's not that much higher than the poor girl that sits at the intake taking your money. She's exposed to fluorescent lights on a slanting wall about 15 feet away. She had body amperage that's almost as high as you get on a tanning bed.

JM: Interesting.

SM: My barber shop's the same way. She got 8 [inaudible54:47] units. When I measured this, I had her shut the lights off and all goes away. She's getting fried all day, every day.

JM: Folks, this is just another reason why you do not want fluorescent lights in your house.

SM: Light emitting diodes (LED) too.

JM: I couldn't agree more. Just from the biological component of the light, not even the electrical component, which I was clueless about until now.

SM: I took my junk in the lighting store before they were advised to me. I spent three hours measuring every light in the place. Almost everyone was bad. LEDs, all the fluorescents were bad. The compact fluorescent lights (CFLs) were super bad.

Let me give you a final anecdote. Stetzer, who did the cow study – A lot of the dairies kept the solar scopes in place. He got a call from one of them who had the oscilloscope in place complaining that all of a sudden, their milk production went way down. They went out there and looked at the scope. The only thing they did was they put in two brand new six-bulb fluorescent lights. That was it. We pulled them out and put them back and measured them in his office. He defabricated a clean LED, of all things. He just measured the crap in his shelters. You can take care most of this stuff.

JM: Yeah. If you believe that it's an issue. The obvious problem is that most of these companies are clueless about it. Even if they were aware, but if they're not willing to spend their extra money to remediate it.

SM: It's not only clueless. The national electric safety code tells the utilities that they cannot use the earth as a primary neutral return. The California PUD, and most California public utility districts and commissions have laws, rules and regs. They're just violated willy-nilly.

JM: That to me would seem to be a perfect opportunity to initiate a class action lawsuit against the utility for violating the existing regulations.

SM: Exactly. But, you know, you can't get attorneys to handle this. They don't understand it. Right now, I'm helping a poor guy in Tennessee who has a trailer park. They put a microwave antenna on his property as a communication device to take their smart meter data back for billing purposes and pieces. Everybody's sick. I would gather much of it is horrible. There's no place to hide.

JM: You've been a real pioneer out there. You've been taking the arrows in the back. You really have. When I read your book, it just resonated with me so much because I could see my own experience. When you're bringing this controversial information to the public, there's this massive effort from the offended or affected corporate interest to discredit you, to take you down, to invest significant resources to demonize you and make you appear like you're a flake.

SM: Exactly.

JM: They've been doing this to you for the last two decades or longer.

SM: Yeah. For forever.

JM: Yeah. A long time. And yet you persist, because obviously you're passionate about this. You're driven. You went into this field for the right reasons. You maintained your integrity, which is something we don't typically see in many professionals.

SM: Not just that, but how exciting is it? Fifty to 60 years ago, I had an intuition about what was going on. The more I work, hey, wow, it's great to know you're right. It took 50 to 60 years. When I'm in my grave, people are going to look back and say, "God. Milham was right. Why didn't we listen to him?"

JM: There's another pioneer similar to you. I think he's passed now. His name is Clair Patterson. I don't know if you're familiar with him. He was the innovative researcher who really brought to light the damages and the dangers of lead in gasoline. We had known for centuries that it was a neurotoxin, yet in the early times they put it in the gasoline. It took someone like Claire Patterson to do the research.

He actually got ice from the Arctic and showed that there was this massive difference. They finally believed it, but they still had this massive discrediting campaign against him. But he

changed it and now lead's out. Similar with your efforts, maybe after you pass, this will happen. But I wasn't aware of these details. I'm really interested and going to seriously evaluate some campaigns that we can initiate to get this remediated, because it's a relatively simple process. I have no problems investing significant resources to get this thing made right.

[-----1:00:00-----]

SM: The latest is really exciting. It looks from my work that the cancers are frequency-specific. The specific frequencies cause specific cancers. The Russians knew this. They weaponized it. In the Cold War, they wiped out some of our ambassadors. You can't run microwaves through big rebar walls. They ran it in through the electric mains. They put dirty electricity at the right frequencies and they knew which ones did it. They gave these people leukemia.

JM: That's interesting. I believe that not all the countries in the world are as foolish – I think that's the best term – as the U.S. Aren't many countries like Russia and Germany, don't they understand this issue, and they remediated it and they don't have the EMI in their electrical system?

SM: Yeah. They've got a big advantage. They can adopt this system. Their system is built so that all returns go back on the wires. The other thing they have is tighter EMI rules. Like this plant that causes ocular melanoma clusters. They couldn't get away with that in Europe. Stetzer told me that when he looks at these variable frequency drives, they usually have machine studs on them for the filter to go on. But the filter is optional in this country. They're not optional in Europe.

JM: It isn't funny, obviously, and and it's not surprising. But it's just so sickeningly sad that corporate greed has allowed the expansion and the progression of so many of these diseases. It's a primary contributing factor, there's no doubt in my mind. Regardless of the mechanism, I believe it's primarily mediated through optimizing mitochondrial function, or unoptimizing or causing mitochondrial dysfunction, that these biological effects are mediated through.

SM: When you want to have some fun, I put on my new papers on my website in PDFs. You've got to read some of those. It'll blow your mind.

JM: I will.

SM: I'd like to scratch into that. I'd be glad to talk to you again if you have any other questions.

JM: Yeah. I'm definitely going to keep your contact information in my rolodex file. No question. Because you are an expert. It would be what I call BF, beyond foolish, to not utilize you as a researcher. If you've spent decades understanding this, you've got knowledge that took you this long amount of time to acquire. It's crazy not to access and utilize it. I look forward to working with you in the future on this.

I couldn't recommend more strongly to pick up a copy of your book, *Dirty Electricity: Electrification and the Diseases of Civilization*. You can get it on Amazon for 3 dollars. There's a Kindle version, which is how I read it. This is a relatively quick read, but it's very engaging.

You wrote it yourself. It's almost like an autobiography because you don't just go into dirty electricity. You talk about your journey, which sort of reinforces the validity of your observations. It really shows the type of person that you are. I really thank you for writing that book. I think if you have any doubt, I couldn't encourage anyone more to pick up a copy. Obviously, you're not making a lot of money at 3 dollars a copy.

Or you can get the papers. You just type in your name, Sam Milham, and dirty electricity. You'll come up to your website and there are papers you can download. It's a great resource. I really want to thank you for your years of pioneering work and sticking in there and really persevering through the discrediting campaigns that industry has hurled at you.

SM: I'm not done yet.

JM: That's great. That's just great. That's so good to hear, because we need guys like you around. There's no question.

[END]