October 23, 2020

Rosemary Chiavetta, Secretary

Pennsylvania Public Utility Commission

Commonwealth Keystone Building

400 North Street, Second Floor

Harrisburg, PA 17120

Re: John Kline v. PPL Electric Utilities Corporation
Docket No. C-2017-2621072

Dear Ms. Chiavetta:

Enclosed for filing with the Commission is John Kline's Petition for Reconsideration of the Commission's October 8, 2020 Final Order in the above referenced docket.

Copies have been served on all parties as indicated in the attached Certificate of Service.

Respectfully Submitted,

John Kline

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

John Kline,	:	
	:	
Complainant,	:	
	:	
v.	:	Docket No. C-2017-2621072
	:	
PPL Electric Utilities Corporation,	:	
	:	
Respondent.	:	

JOHN KLINE

PETITION FOR RECONSIDERATION

OF

THE COMMISSIONS OCTOBER 8, 2020 ORDER IN HIS FORMAL COMPLAINT

I am filing this Petition for Reconsideration of the Commission's October 8,2020 Opinion and Order on docket C-2017-2621072 (Kline Order)

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I am submitting this Petition to request the Commission reconsider its Kline Order because of the following new or novel arguments and information which did not arise until after the close of my formal hearing and those issues which arose after the conclusion of my formal complaint hearing and briefing process, in addition to arguments previously overlooked by the Commission.

I. Legal Standards for Reconsideration of a Commission Order

The Pennsylvania Public Utility Code ("Code") provides that a party may seek reconsideration of a Commission order within 15 days after it is entered. See 52 Pa. Code§ 5.572. A petition for reconsideration is proper where the party raises "new or novel arguments, not previously heard, or considerations which appear to have been overlooked or not addressed by the Commission." Duick v. Penn. Gas & Water Co., 56 Pa. PUC 553,559 (1982).

§ 5.572. Petitions for relief.

(a) Petitions for rehearing, reargument, reconsideration, clarification, rescission, amendment, supersedeas or the like must be in writing and specify, in numbered paragraphs, the findings or orders involved, and the points relied upon by petitioner, with appropriate record references and specific requests for the findings or orders desired.
(b) A copy of every petition covered by subsection (a) shall be served upon each party to the proceeding.
(c) Petitions for reconsideration, rehearing, reargument, clarification, supersedeas or others shall be filed within 15 days after the Commission order involved is entered or otherwise becomes final.
(d) Petitions for rescission or amendment may be filed at any time according to the requirements of section 703(g) of the act (relating to fixing of hearings).
(e) Answers to a petition covered by subsection (a) shall be filed and served within 10 days after service of a petition.
(f) Subsections (a)—(e) supersede 1 Pa. Code § 35.241 (relating to application for rehearing or reconsideration).

Authority

The provisions of this § 5.572 amended under the Public Utility Code, 66 Pa.C.S. § § 501, 504—506, 1301 and 1501.

Source

The provisions of this § 5.572 adopted October 14, 1984, effective January 1, 1985, 14 Pa.B. 3819; amended January 24, 1997, effective January 25, 1997, 27 Pa.B. 414; amended April 28, 2006, effective April 29, 2006, 36 Pa.B. 2097. Immediately preceding text appears at serial pages (275287) to (275288).

II. New or novel arguments not previously heard

These considerations, which involve "new or novel arguments", not previously heard, or considerations which appear to have been overlooked or not addressed by the Commission," justify reconsideration of the Kline Order pursuant to Section 5.572 of the Code.

a. Nothing in the language of Act 129 facially requires every customer to endure involuntary exposure to RF emissions

During these proceedings and numerous other "smart meter" cases, PPL and other Electric distribution companies (EDC) and the PUC have insisted that the installation of smart meters is mandatory for all customers in their service area. Some examples:

John Kline v. PPL Electric Utilities C-2017-2621072, opinion and order pg. 88, c.

Disposition:

The Commission has addressed the position of various complainants objecting to the installation of AMI meters, that the deployment of smart meters in accordance with the provisions of the Act should be a voluntary election by the customer. We have concluded that there is no provision in the Code, the Commission's Regulations, or Orders that allows a utility customer to "opt-out" of smart meter installation. See, e.g., Starr v. PECO, supra, Bervinchak v. PPL Electric Utilities Corporation, Docket Nos. C-2016-2572824 and C-2016-2577527 (Initial Decision dated August 16, 2018; Final Order October 2, 2018); Povacz v. PECO Energy Company, Docket No. C-2012-2317176 at 10 (Order and Opinion entered January 24, 2013); Povacz v. PECO Energy Company, Docket No. C-20152475023 (Opinion and Order entered 26, 2018). This determination is subject to the opportunity for any affected EDC customer to establish, by a preponderance of the evidence, in any fact-specific proceeding, that installation of such meter would violate Section 1501 of the Code. See Kreider; Romeo.

John Kline v. PPL Electric Utilities C-2017-2621072, Initial Decision (Id.) pg. 22.

The implementation of the Respondent's Smart Meter Deployment Plan and the approval of the costs associated with its implementation have been found by the Commission to be in accordance with Act 129 of 2008, 66 Pa. C.S. § 2807(f). The Respondent is required by statute and Commission Order to implement a Smart Meter Program, install smart meters throughout its service territory, and to charge a Smart Meter Technology Surcharge to all of its metered customers.

Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923, pg. 34

Smart Meter Mandate
Act 129 requires electric distribution companies (EDCs) with at least 100,000 customers, such as Med-Ed,[49] to file a smart meter technology procurement and installation plan with the Commission for approval.[50] Met-Ed is an EDC with more than 1000,000 customers.[51] By Smart Meter Procurement and Installation Order entered on June 24, 2009, the Commission ordered EDCs with greater than 100,000 customers to adhere to the guidelines established for smart meter technology procurement and installation.[52] By Final Order entered on June 25, 2014, the Commission approved Met-Ed's smart meter deployment plan.[53]

In the above-mentioned examples and all smart meter cases before the PUC, they have sided with the EDC in their rulings. However, the recent Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020 (CWC Opinion) pg. 13 states the following.

Thus, although Act 129 does appear to anticipate installation of smart meters on customers' premises, nothing in the language of Act 129 facially requires every customer to endure involuntary exposure to RF emissions from a smart meter. Rather, the language of Act 129 seems calculated to support customer choice in the use of smart meter technology. Therefore, we conclude that Act 129 does not preclude either PECO or the PUC from accommodating a customer's request to have RF emissions from that customer's meter turned off, to have a smart meter relocated to a point remote from the customer's house, or some other reasonable accommodation.

I would like to emphasis "some other reasonable accommodation" for arguments forthcoming.

And CWC Opinion pg. 17 states the following:

As discussed above, the PUC's position that Act 129 requires installation of wireless smart meters in all consumer residences is incorrect. Accordingly, the PUC is also incorrect in finding that PECO may not or need not offer any accommodation to Consumers.

Therefore, I properly contended that Act 129 was not meant to be a mandate, but rather an option for customers agreeing to smart meter installation, so the PUC ruling should be reversed.

b. Act 129 does not preclude either PPL or the PUC from accommodating a customer's request to refuse installation

During these proceedings and numerous other "smart meter" cases, the PUC has stated that it does not have the authority to grant accommodations to customers who do not want a smart meter installed and cannot authorize PPL or other Electric distribution companies (EDC) to offer accommodations. Some examples:

John Kline v. PPL Electric Utilities C-2017-2621072, opinion and order pg. 36

The presiding ALJ rejected the position of Mr. Kline. The ALJ reasoned that Mr. Kline's arguments have been conclusively considered and rejected in prior Commission proceedings. These are proceedings in which the Commission has held that it does not have the authority, absent a directive in the form of legislation, to prohibit PPL from installing a smart meter where a customer does not want one. See I.D. at 21-23; Povacz I.

John Kline v. PPL Electric Utilities C-2017-2621072, Initial Decision (Id.) pg. 23

To the extent that Mr. Kline desires the ability to opt out of the smart meter installation, he should advocate for such ability before the General Assembly, which is currently considering amending Section 2807(f) in some pending bills including: PA House Bill Nos. 1564 and 1565; and Senate Bill No. 443. These bills are not yet law. The Commission has held that it does not have the authority, absent a directive in the form of legislation, to prohibit the Respondent from installing a smart meter where a customer does not want one. See Maria Povacz v. PECO Energy Company, Docket No. C-2012-231716 (Opinion and Order entered January 24, 2013). The Commission held that similarly

situated Respondents would be in violation of law if they did not install a smart meter at similarly situated Complainants' residences. *Id., Frompovich* at 10. Thus, I find in favor of PPL on this issue.

Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923, pg. 34

In prior smart meter and deployment cases the Commission has construed Act 129 as not providing customers the alternative to opt-out of smart meter installations.[54] Met-Ed's smart meter deployment plan approved by the Commission does not contain a provision permitting a customer to opt-out of a smart meter installation.

In the above-mentioned examples and all smart meter cases before the PUC, they have sided with the EDC in their rulings. However, the recent Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020 (CWC Opinion) starting on pg. 10 and ending on pg. 13, states the following.

Act 129 mandates that an electric distribution company, such as PECO, "shall furnish smart meter technology . . . in accordance with a depreciation schedule not to exceed 15 years." 66 Pa.C.S. §2807(f)(2)(iii). However, nothing in the statutory language affirmatively mandates that customers must allow installation of wireless smart meters.11
To "furnish" means "to provide with what is needed; . . . supply, give." Webster's Ninth New Collegiate Dictionary 499 (1985). The definition does not imply that the recipient is forced to accept that which is offered. Therefore, we find the PUC is incorrect in concluding that Act 129 facially precludes any customer refusal of installation of smart meters.

Act 129 requires an electric distribution company to "furnish smart meter technology," 66 Pa.C.S. § 2807(f)(2)(iii), but does not require every customer to avail himself of every aspect of that technology. Notably, several provisions of Act 129 seem to contemplate customer choice in the degree to which the smart meter technology is used.

For example, Act 129 requires the ***customer's consent*** *in order for the electric distribution company to allow either direct meter access or electronic access to the customer's meter data by third parties such as electric generation suppliers or providers of conservation and load management services. 66 Pa.C.S. § 2807(f)(3).*

Accommodation of a customer's request to deactivate the meter's RF emissions would not be inconsistent with this provision, since information could not be shared with third parties without the customer's consent in any event.

Similarly, Act 129 requires an electric distribution company to develop time-of-use rates and real-time price plans and to "offer the time-of-use rates and real-time price plan to all customers that have been provided with smart meter technology under paragraph (2)(iii)." 66 Pa.C.S. § 2807(f)(5) (emphasis added). "Residential or commercial customers may elect to participate in time-of-use rates or real-time pricing." Id. (emphasis added). They are not required to do so. Again, accommodating a customer's request to avoid RF emissions would not violate the requirement to offer time-of-use rates and real-time price plans, since customers are not required to participate in such plans.

In addition, as Consumers correctly argue, Act 129's definition of "smart meter technology" leaves the door open for accommodations of customer requests to avoid RF emissions from smart meters. The language of the definition is consistently couched in permissive terms, as it relates to customers' use of the available smart meter technology:

[T]he term "smart meter technology" means technology, including [(not necessarily limited to)] metering technology and network communications technology capable of [(not "requiring")] bidirectional communication, that records [(not "transmits")] electricity usage on at least an hourly basis, including related electric distribution system upgrades to enable the technology. The technology shall provide customers with direct access to and use of [(not mandatory use of)] price and consumption information. The technology shall also:

(1) Directly provide customers with information on their hourly consumption.

(2) Enable time-of-use rates and real-time price programs. [(As discussed above, customer is not required to participate.)]

(3) Effectively support [(not require)] the automatic control of the customer's electricity consumption by one or more of the following as selected by the customer:
(i) the customer [(the customer retains control)];
(ii) the customer's utility; or
(iii) a third party engaged by the customer or the customer's utility.

66 Pa.C.S. § 2807(g) (emphasis added).
Notably, the PUC's own internet consumer information page concerning Act 129 repeatedly speaks in permissive language. For example, it provides: "Act 129 of 2008 provides Pennsylvania electric utility consumers opportunities to take energy efficiency and conservation to the next level." "Energy Efficiency & Conservation Information for your Home," http://www.puc.state.pa.us/General/consumer_ed/pdf/EEC_Home-FS.pdf (last visited October 7, 2020) (emphasis added). "In creating [energy efficiency and conservation programs (EE&C)], the [PUC] recognized a 'one-size-fits-all' approach would not be the best approach. The [PUC] balances the needs of consumers with those of the [electric distribution companies (EDCs)]. . . ." Id. (emphasis added). "The PUC's program standards provided each EDC with the ability to tailor its energy efficiency and conservation plan to its service territory and consumers." Id. The EDCs' plans include "incentive programs" to "encourage" residential consumers to purchase energy-efficient products. Id. (emphasis added). EDCs must provide consumers with specific information "on the money-saving

EE&C programs available to them because of Act 129. Id. (emphasis added). These programs are designed to help consumers use electricity efficiently, curb consumption and reduce overall demand for electricity. Many of these programs include subsidies from the EDC to encourage the use and employment of energy efficiency measures." Id. (emphasis added).

*Moreover, nothing in the language of Act 129 appears to preclude either PECO or the PUC from granting an accommodation to a customer who desires to avoid RF emissions from a wireless smart meter. In Benlian v. PECO Energy Corp. (E.D. Pa., No. 15-1218, filed July 20, 2016), 2016 U.S. Dist. LEXIS 95082, for example, PECO installed a smart meter on a pole some distance from the plaintiff's home in accommodation of his claim that the prior installation of the meter on his home had caused new or exacerbated health problems. Id., slip op. at __, 2016 U.S. Dist. LEXIS 95082, at *10. Thus, although Act 129 does appear to anticipate installation of smart meters on customers' premises, nothing in the language of Act 129 facially requires every customer to endure involuntary exposure to RF emissions from a smart meter. Rather, the language of Act 129 seems calculated to support customer choice in the use of smart meter technology. Therefore, we conclude that Act 129 does not preclude either PECO or the PUC from accommodating a customer's request to have RF emissions from that customer's meter turned off, to have a smart meter relocated to a point remote from the customer's house, or some other reasonable accommodation.*

Therefore, I properly contended in various sections of the Kline Main Brief and portions of the Kline Reply Brief, that the Commission has engaged in an erroneous interpretation of the legislative intent concerning the mandatory nature of smart meter installation by EDCs subject to the provisions of Act 129 and nothing in the language of Act 129 facially requires every customer to endure involuntary exposure to RF emissions. Based on the CWC Opinion, the ALJ recommendations (John Kline v. PPL Electric Utilities C-2017-2621072, opinion and order pg. 36) below should be reversed.

The presiding ALJ rejected the position of Mr. Kline. The ALJ reasoned that Mr. Kline's arguments have been conclusively considered and rejected in prior Commission proceedings. These are proceedings in which the Commission has held that it does not have the authority, absent a directive in the form of legislation, to prohibit PPL from installing a smart meter where a customer does not want one. See I.D. at 21-23; Povacz I.

c. <u>The PUC violated the Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020</u>

The Kline opinion and order along with numerous additional smart meter decisions came down on October 8,2020, the same date as the Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020 (CWC Opinion). Due to this the PUC was unable to reference the CWC Opinion in it's ruling. However, the initial decision, dismissing the complaint for Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923 was ruled on by ALJ Conrad A. Johnson one week after the CWC Opinion on October 15, 2020. In this decision, the ALJ referenced the CWC Opinion in a manner which directly violates the intention of the CWC Opinion. The relevance to this petition for reconsideration is outline below, the PUC can not use the initial decision for Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923 as precedent in this case or any future smart meter decisions.

In the initial decision for Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923, pg. 34, the ALJ stated the following:

Smart Meter Mandate
Act 129 requires electric distribution companies (EDCs) with at least 100,000 customers, such as Med-Ed,49 to file a smart meter technology procurement and installation plan with the Commission for approval.50 Met-Ed is an EDC with more than 1000,000 customers.51 By Smart Meter

Procurement and Installation Order entered on June 24, 2009, the Commission ordered EDCs with greater than 100,000 customers to adhere to the guidelines established for smart meter technology procurement and installation.52 By Final Order entered on June 25, 2014, the Commission approved Met-Ed's smart meter deployment plan.53
In prior smart meter and deployment cases the Commission has construed Act 129 as not providing customers the alternative to opt-out of smart meter installations.54 Met-Ed's smart meter deployment plan approved by the Commission does not contain a provision permitting a customer to opt-out of a smart meter installation. Recently, Commonwealth Court has held that the Commission's construction of Act 129 on the issue of opting out is incorrect.

Although the ALJ referenced the CWC opinion, he still ruled that the smart meter installation is mandated. The question has to be asked, when the purpose of the PUC is to balance the needs of consumers with those of the EDCs, why would they continue to rule that Act 129 mandated the smart meter installations, even though a contrary opinion came down from a higher court? What benefit is there to the PUC and the EDCs to continue to further impose the need for consumers to take more time and expense to proceed with their cases through the appeal process. It is beyond burdensome and is an imposition that is "unreasonable."

ALJ Conrad A. Johnson justifies this in the following manner, Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923, pg. 35

In Povacz et. al. v. Pa. Pub. Util. Comm'n, No. 492 C.D. 2019 (Pa. Cmlth. Filed October 8, 2020) slip op.; 2020 Pa. Commw. LEXIS 714, the Court opined that the language of Act 129 did not appear to preclude either the utility or the Commission from granting an accommodation to a customer who wanted to avoid installation of a wireless smart meter. "Rather, the language of Act 129 seems calculated to support customer ***choice*** *in the use of smart meter technology." Slip op. at 13. (emphasis in original). However, the Court explained that the burden of proof remained with the customer to establish either that a smart meter is unsafe or harmful or that the utility's refusal to provide other reasonable accommodations to the installation of a smart meter is unreasonable. The case was remanded to the Commission to allow consideration of the customers' requests for accommodations and determination of what, if any, accommodations are appropriate. Here, it must*

be noted that the time for seeking further review of the Court's decision in Povacz has not expired as of the date of this decision. Additionally, there is a dissenting opinion in Povacz, stating, "The intent of the General Assembly was not ambiguous. Smart meters are mandatory in the Commonwealth. There is no opt-out provision." Slip Op. at JAC- 4. The dissenting opinion is in accord with the Commission's earlier cases that there is no opt-out provision under Act 129.

I do agree with the ALJ's statement that the time for seeking further review of the Court's decision in Povacz has not expired as of the date of this decision. However, if it is the intention of the PUC to request review or appeal of the CWC Opinion, they should stay all current smart meter cases and not rule on them until that process is completed. ALJ Conrad A. Johnson's mention of the dissenting opinion in the CWC Opinion should not have been used in this decision. A dissenting opinion (or dissent) is an opinion written by one or more judges expressing disagreement with the majority opinion. A dissenting opinion does not create binding precedent, nor does it become a part of case law. Only the majority opinion in countries which use the common law system becomes part of the body of case law!

The most concerning and disturbing part of ALJ Conrad A. Johnson's decision is found on Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923, bottom of pg. 35 continuing to pg. 36:

Assume for the purposes of argument that the Court's opinion in Povacz is not challenged and therefore customers have a choice concerning the installation of a smart meter. Assume that Met-Ed has determined that smart meters are more cost efficient than analog meters. The question becomes whether the Commission could order Met-Ed to desist from installing smart meters without any evidence that smart meters are unsafe or a health hazard or that installation is unreasonable and thereby in violation of reasonable service provisions of Section 1501 of the Code. The answer is no because Met-Ed's decision to install smart meters as cost efficient would be a business or management decision beyond the Commission's authority. Metro. Edison Co. v. Pa. Pub. Util.

Comm'n, 62 Pa.Cmwlth. 460, 437 A.2d 76 (1981). In Metro. Edison, the court held the Commission is not empowered to act like a super board of director to interfere in the internal management affairs of a utility.

Why would an official of the PUC provide the EDC with an argument as to how they can get around the ruling of a higher court? Why is the PUC assisting the EDC when the purpose of the PUC is to balance the needs of consumers with those of the EDCs? Why would a representative of the PUC go out of his way to use this suggestive wording so obviously aimed at an EDC? This is easily construed as an unethical practice and perhaps bordering on collusion. I have to ask what vested interest does the PUC have that they would be digging in their heals on this issue to obviously favoring EDC's. I challenge anyone to find such direct steering or hint of a legal path by the PUC to any complainant that has gone through smart meter proceedings. Such practices by an ALJ's only serve to enhance a complainants challenges and simply do not seem fitting considering their role is to balance the needs of the consumer and the EDC.

Based on these arguments, the PUC should not use the initial decision of Noreen McCarthy v. Metropolitan Edison Company C-2019-3006923 as precedent when ruling on this request for reconsideration because it is bias.

d. <u>Electro-hypersensitivity is a Newly Identified and Characterized Neurologic Pathological Disorder</u>

The following new evidence did not arise until after the close of my formal

hearing and arose after the conclusion of my formal complaint hearing and briefing process. This medical review "Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder: How to Diagnose, Treat, and Prevent It" (Exhibit – A) published in the International Journal of Molecular Sciences can be found on the US National Library of Medicine National Institutes of Health (Government Website) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7139347/ and was published on March 11,2020. I acknowledge that this study is compiled of scientific and technical date which I am not qualified to interpret, so this is used as an example of numerous studies related to this issue. The PUC and the EDCs and their expert witnesses cannot continue to ignore the vast amount of scientific data available on this subject. But Neither expert witness has a career or participated in any study on the subject of ehs/ems, so their expertise is no longer sufficient considering their lack of experience in this matter. This study outlines numerous tests a patient will need to undergo to receive an official diagnosis. Tests that possibly a utility customer simply cannot afford. Since this would fall under the subject of health or safety, it must not be required for consumers to acquire numerous, expensive testing to prove the safety aspect of the meters, we should simply have a choice to remove the irritant from our surroundings without a government agency demanding otherwise. The Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020 (CWC Opinion) pg. 15 states:

The PUC's position on the burden of proof issue is inconsistent. At one point, the PUC appears to concede the correctness of Consumers' position. The PUC states the ALJ's role is to determine

whether "'use of a smart meter . . . will constitute unsafe or unreasonable service . . . .'" Povacz (Pa. P.U.C., No. C-2015-2475023, filed Mar. 28, 2019), slip op. at 15 (quoting Kreider v. PECO Energy Co. (Pa. P.U.C., No. P-2015-2495064, filed Jan. 28, 2016), slip op. at 21-23) (emphasis added).
Elsewhere in its opinion, however, the PUC posits that Consumers "must prove, by a preponderance of the evidence, that [their] exposure to the RF fields from the wireless smart meter that PECO plans to install . . . will 'exacerbate' or 'adversely affect' [their] health and, therefore, constitute unsafe and unreasonable service . . . ." Povacz (Pa. P.U.C., No. C-2015-2475023, filed Mar. 28, 2019), slip op. at 27 (emphasis added).
We infer from its inconsistent language that the PUC did not recognize this distinction in the context of Consumers' claims. In fact, a review of the PUC's decision does not indicate whether the distinction was significant to the PUC's reasoning. The PUC's decision does not clearly purport to require Consumers to prove the meter installation is both unsafe and unreasonable as applied to them. However, Consumers are logically correct that because PECO has a mandate to provide safe and reasonable service, Consumers may establish a violation of that mandate by showing the wireless smart meter requirement is either unsafe or unreasonable.

Since the criteria is either unsafe or unreasonable and not both, the fact that I am not qualified to completely interpret this study to prove safety is irrelevant. However, page 14 of 20 of this document states the following:

"These various considerations should not be neglected, since to avoid risks, knowledge of them could lead to protective measures in EHS and/or MCS patients. Such measures should include as much as possible EMF and chemical avoidance, use of anti-EMF clothes, and earthing-related electric charge detoxication. In addition, public preventive measures for the most vulnerable people—particularly pregnant women, infants, children, and adolescents—should be taken by limiting or even totally avoiding the use of wireless technology in these conditions. Such protective measures should also be taken and carried out in vulnerable patients, i.e., in cardiac patients with pacemakers, in patients with auditive prothesis, and in patients with neurodegenerative diseases."

I liken this to someone with a food allergy. As someone who has worked with the food service industry for 30 years and is Serve Safe Certified, this is a subject I am qualified on. Not everyone who has a food allergy has a medical diagnosis. If they have a reaction to certain foods, they simply avoid eating that particular food and have to check the ingredients in everything they purchase to avoid buying anything that would cause them issues. Four government regulatory agencies play major roles in carrying out food

safety regulatory activities: the Food and Drug Administration (FDA), which is part of the Department of Health and Human Services (DHHS); the Food Safety and Inspection Service (FSIS) of the US Department of Agriculture (USDA). None of these agencies "mandate" that an establishment cannot serve foods from a major food allergen group, they also do not mandate that the consumers eat these foods due to the high risk. There are certain safety measures set up for individuals with food allergies. The Food Allergen Labeling and Consumer Protection Act (FALCPA) is a United States law that requires all food labels in the United States to list ingredients that may cause allergic reactions and was effective as of January 1, 2006. While many ingredients can trigger a food allergy, this legislation only specifies the eight major food allergens. The purpose of this act was to prevent manufacturers from using misleading, uncommon, or confusing methods to label their ingredients. Someone shopping for a friend with a soy allergy might not know that lecithin is derived from soy. Therefore, having an ingredient in a list merely read "lecithin" is misleading and confusing. Now it must be labeled "lecithin (soy)" to help prevent consumers making errors. This law is in regard to the eight most common food allergens. These affect the most people and the proteins are commonly found in other ingredients. They account for about 90% of food allergies. The main eight are: Milk, Eggs, Fish, Crustacean shellfish, Tree nuts, Peanuts, Wheat and Soybeans. Consumers with allergies do have a choice, many restaurants and food service establishments take great steps to assure that their customers with food allergies have options if they make them aware of the allergy. They do not have to prove, with extensive medical data that they can be severely harmed by certain foods. If a particular establishment cannot

accommodate them, they have the choice to go elsewhere.

For people who are suffering from EHS or simply understand the dangers of constant exposure, according to the PUC, we do not have a choice. The EDC in our geographic area is the only option we have and the PUC, a regulatory agency is mandating that the EDCs must put us at risk without any options for accommodations. The PUC does not even require the EDC to inform their customers of documented known risks. This in and of itself is unreasonable! Ideally the EDC and the customer should be able to determine reasonable accommodations.

The Commonwealth Court Opinion states the following which is in agreement with this argument on pg. 12 and 13.

*Notably, the PUC's own internet consumer information page concerning Act 129 repeatedly speaks in permissive language. For example, it provides: "Act 129 of 2008 provides Pennsylvania electric utility consumers **opportunities** to take energy efficiency and conservation to the next level." "Energy Efficiency & Conservation Information for your Home," http://www.puc.state.pa.us/General/consumer_ed/pdf/EEC_Home-FS.pdf (last visited October 7, 2020) (emphasis added). "In creating [energy efficiency and conservation programs (EE&C)], the [PUC] recognized **a 'one-size-fits-all' approach would not be the best** approach. The [PUC] **balances the needs of consumers** with those of the [electric distribution companies (EDCs)]. . . ." Id. (emphasis added). "The PUC's program standards provided each EDC with the ability to tailor its energy efficiency and conservation plan to its service territory and consumers." Id. The EDCs' plans include "**incentive programs**" to "**encourage**" residential consumers to purchase energy-efficient products. Id. (emphasis added). EDCs must provide consumers with specific information "on the money-saving EE&C programs **available** to them because of Act 129. Id. (emphasis added). These programs are **designed to help consumers** use electricity efficiently, curb consumption and reduce overall demand for electricity. Many of these programs include subsidies from the EDC to **encourage** the use and employment of energy efficiency measures." Id. (emphasis added).*
Moreover, nothing in the language of Act 129 appears to preclude either PECO or the PUC from granting an accommodation to a customer who desires to avoid RF emissions from a wireless smart meter.

Therefore, since I have taken additional steps to limit exposure in my household (details to be addressed later in this petition) the PUC should reverse its Opinion and

Order on docket C-2017-2621072 and allow PPL and other EDCs to go forth with accommodating their customers.

e. Additional mitigation efforts in the Kline household

As the PUC pointed out in the Kline Order pg. 24, I did not specifically bring any known medical issues into these proceedings since nothing was medically verified.

> *THE WITNESS: [Mr. Kline] We have some issues; I don't have anything medically verified. But we do have issues and we take steps in our house personally to try to cut back on that. Tr. at 33.*

Since the PUC had made it clear that a preponderance of the evidence would be needed to prove actual harm, arguing non verified medical details would have been futile, so the decision was made not to include any personal and private details. Instead the focus was on the risk of harm, safety includes freedom from risk of harm, not merely freedom from the harm itself. The plain language of Section 1501 requires neither proof of actual harm nor proof of proximate causation in order to show lack of safety. The ALJ in the Kline initial decision pg. 15 and upheld by the PUC in the Kline order pg. 24 ruled against this since I did not meet their burden of proof and sided with the PPL expert witnesses.

Based on the foregoing, we shall adopt the conclusion of the presiding ALJ as set forth at the Initial Decision, p. 15, that "These findings [IEI] from public health entities and expert panels show that the theory of IEI caused by exposure to RF fields has not been generally accepted in the medical community. PPL Electric Statement No. 2."[1]

[1] *We note the opinion of PPL witness, Dr. Israel, citing "reliable" studies, that hold that IEI and the variety of symptoms attributed to it are not caused by exposure to RF fields. PPL M.B. at 21, citing PPL Electric Statement No. 2 – "idiopathic" means cause unknown;*

In the Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020, they did determine that the PUC used the applicable burden of proof concerning proof of harm from RF emissions. CWC Opinion pg. 21, they did conclude that ruling with the following:

*However, as discussed above, the PUC appears to have based its decision largely on its conclusion that Act 129 mandated installation of wireless smart meters on every residence and did not permit the PUC to grant **any** form of relief to Consumers to accommodate their desire to avoid RF emissions. On remand, the PUC should consider whether reasonable accommodations should be provided in light of the conclusion that Act 129 does not preclude such accommodations of customers' health concerns, regardless of proof of harm.*

Based on the conclusion to this opinion, I would like to point out some changes made in the Kline household since the hearing and briefing process has ended. I will also disclose minimal health issues that have improved since making these changes. We have eliminated all Wi-Fi internet service in the home by switching to a fully wired fiber optic internet service. In addition, by switching to the system, I have been able to utilize Microsoft teams for meetings through the completely wired internet to eliminate lengthy meetings (hours at a time) and conversations on the cell phone. By making these changes, insomnia has subsided and headaches from spending much of my working day on a cell phone have ceased. In addition, my spouse has expressed the following improvements: Increase in ability to sleep, less inflammation of joints and sinus, better vision, significant improvement of tinnitus, far less numbness and tingling of extremities as well as

also, PPL R. Exc. at 5-6.

improvement of dizziness. This list should not be considered an exhaustive list.

Therefore, if the decision is made to install a smart meter, we must conclude it will cause us more suffering because of an increase in the aforementioned symptoms. When ruling on this reconsideration, the PUC should take these new changes into consideration since Act 129 does not preclude accommodations of customers' health concerns, regardless of proof of harm.

III. Considerations overlooked or not addressed by the Commission

The following was overlooked in the Kline opinion and order and should be considered during the request for reconsideration.

a. John Kline's request for reasonable accommodations

During the hearing held on March 29, 2018 for docket C-2017-2621072, I prepared a written testimony which I intended to read during the proceedings. Due to the length of the testimony, ALJ Barnes and the PPL attorneys requested that this testimony be read by each party rather then me reading it to save on time. (PPL-Kline Transcript pg.14@19.). This testimony was admitted into the record as exhibit 1. In the Kline Initial Decision, ALJ Barnes made the following statement

during her deposition (id. 14)

Other than Complainant's Exhibit 1, which was drafted by Complainant as his Statement, I am giving little or no weight to the other exhibits because the authors of those studies, letters or other documents were not present to be cross-examined, and PPL was denied an opportunity to test the veracity of their medical opinions or their qualifications to render such opinions. 66 Pa. C.S. § 332(c). *Answerphone, Inc. & Elite Answering Serv. v. The Belle Tele. Co. of Pa.,* 1993 Pa. PUC LEXIS 70, at *29-30 (Order entered April 1, 1993).

Since ALJ Barnes inferred that she had given weight to Kline exhibit 1, there is one part I would like to address which was overlooked in the initial decision and opinion and order, regarding accommodations. This can be found in section 10 of exhibit 1. (This document did not contain page numbers since my intention was to read it during the hearing.)

"Dirty electricity is something I never heard of until I started investigating the issues with the smart meters. During our research, I have come to find out that the current meters PPL has installed, that transmit the usage through power lines are also responsible for the same amount if not more dirty electricity in the home. It is no coincidence that both my wife and I have had symptoms that can be contributed to dirty electricity since they were installed. Therefore, the only resolution that would be *acceptable to us and many citizens of Pennsylvania would be to have the option of a true analog meter. The premise that they are no longer available is false."*

Additional information on Dirty electricity can be found on Exhibit Kline 2T which was admitted into the record.

The meter currently installed on my home, a PLC (power-line communication) is obsolete for PPL since they turned off their system early in 2020, Yet this meter in of itself has safety and health concerns. Since PPL can no longer utilize this meter for meter readings, I have been calling in monthly readings for accurate billings for the last 8 months. This same thing can be accomplished by a standard analog meter which would

be the only acceptable accommodation for my family. This would be an inexpensive solution for PPL since no parallel billing system would be needed. The PPL smart grid will continue to function if I am given a non- radiating meter. The PPL smart grid has functioned just fine without me having a smart meter on my house, in the 10 months since PPL dismantled its PLC reporting system and was billing me based on my called in meter readings. These readings could be easily verified. At a cost of under $50.00 per meter this would be the most economically sound and safest solution for both parties. In addition, the premise that they are no longer available is false. Exhibit B shows the availability of a standard analog meter available from electrahealth.com for under $50.00. This meter is a standard meter used in all 50 US States. It is certified for use in California as well. It is also suitable for power systems that are compatible with the US. 60 Hz 120/240 volt with US compatible socket. Whether the meter is purchased by the EDC or the customer would be acceptable, as long as the EDC installs the unit at their cost, which they would have to do no matter what meter is used. The Commonwealth Court of Pennsylvania's opinion on No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019 Filed: October 8, 2020 states that the burden to concerned customers outweighs any minimal burden to the EDC. CWC Opinion pg. 18.

The record does not contain evidence from PECO that it would incur any extreme costs by accommodating Consumers' desires to avoid RF emissions in three homes in PECO's service area. Even if Consumers obtain the relief they seek, it is difficult to imagine that large numbers of other PECO customers will then flood the utility with requests to avoid RF emissions at increased cost. Thus, even though the actual risk to Consumers' health is uncertain, their suggestion that the burden to them of forced exposure to additional RF emissions outweighs any minimal burden to PECO is well taken.

Therefore, this reasonable request for accommodation should be taken into serious consideration by both PPL and the PUC in this request for reconsideration.

Note – Any reference to PECO in the Commonwealth Court opinion would apply to all EDCs installing smart meters.

IV. Matter of Record – PPL agreed not to install a smart meter during the appeal process

In lieu of submitting a stay pending action on petition for review or a petition for supersedeas, I reached out to Devon Ryan, attorney for PPL and requested that they not install the smart meter during the appeal process. Mr. Ryan, on behalf of PPL graciously agreed. A copy of the email conversation is submitted as exhibit C so in is on the record. This agreement should apply to the entire appeal process including this request for reconsideration or any additional appeals to the Pennsylvania Commonwealth court if needed. If for some reason PPL attempts to install a smart meter an immediate petition for supersedeas will be submitted.

Exhibit C Attached

V. Conclusion

And finally, I would like to address the subject of reasonableness. There has been nothing reasonable about this whole escapade of vying for something as simple and necessary as electric service. I contend that the system in the state of Pennsylvania has failed its' citizens magnificently. For as many of us who have chosen to endure the complicated and demanding requirements of these legal proceedings there is at least an equal number of people who did not, simply because they found the entire process an overwhelming burden and bias in favor of protecting corporations over citizens. This should not be the case. It should not be out of the reach of any citizen of the state to reach out for assistance or to have their basic rights, one of which is to have a grievance with the system heard in a way that is not so complicated and requires special skill and extensive time devoted to research in order to fulfill obligations in proceedings.

This was not the intent of Congress and the Department of Justice when they ratified the system and definitions thereof, for citizens dealing with any disability. (Department of Justice guidance on the Americans with Disabilities Amendments Act – CFR Title 28, Part 35). Too many are getting the run-around from public officials and others when they ask for accommodation or oppose policies that are discriminatory to them. These officials often claim that "RF sensitivity" or electromagnetic sensitivity is not covered by the Americans with Disabilities Act/Americans with Disabilities Amendments Act or that people have to go through elaborate or expensive steps to "prove" they are disabled or prove, as it has been in the case of the PUC, that the service that an EDC provides is not

safe and reasonable. These statements are false. These officials are misreading and misinterpreting what the law plainly says and blocking civil rights. They are either grossly ignorant of laws they have a duty to know about or not acting in good faith.

What exactly is at the heart of all of this? What could possibly be the motivation by either the EDC's or the PUC in blocking the path to wellness and choice of the customer/citizen over something as simple as an electric metering device because that clearly was not the intent of the Department of Justice and Congress when they took great effort to correct the issues that infringed on citizens and amended the ADA in 2016.

In 2016, the Department of Justice adopted new rules to codify the Americans with Disabilities Amendments Act (ADAA) regarding Title II (nondiscrimination in State and local government services) and Title III (nondiscrimination by public accommodations and commercial facilities).

Included in the rules of Title 28, Chapter 1 § 35 and § 36 is Appendix C (p. 137). Appendix C is DOJ's explanation of the ADAA sections and changes, and it's codified into the federal law. Appendix C debunks many of the false claims being made.

To be consistent with the ruling that the Commonwealth Court made in reference to the PUC overseeing the cases being heard by parties willing to continue to address their needs despite being led down a path of lies and hopelessness, then "reasonable" would include the PUC amending their previous rulings of denying complainants support and properly applying what Congress intended for citizens of every state of this nation by

every commercial facility, which by definition is an EDC and every local government agency, which by definition is the PUC. States also have disability rights rules that are at least as protective as ADA/ADAA.

Under the Title 28, Chapter 1 § 35 It has been established that if a person meets the definition of "disability", then he/she is qualified as disabled under the ADA/ADAA. Congress rejected narrow definitions and narrow applications. Disability is to be construed broadly. In other words, the DOJ and congress defined or set the bar as to what "reasonable" is and what "accommodation" looks like. The real issue is, have the EDC's and the PUC complied with their obligations and whether discrimination has occurred, not whether the individual meets the definition of "disability." The question of whether an individual meets the definition of "disability" under this part should not demand extensive analysis.

p. 144 Sections 35.108(d)(1)(ii) and 36.105(d)(1)(ii)

A person does not have to go through extensive documentation to an entity about their disability. An affidavit from the disabled person, for example, can often suffice as the documentation. That means no expensive doctor's visits or testing is required. A person is not prohibited from submitting more if he or she wishes or to help tailor the disabled accommodation.

Impairments that are episodic or in remission or are helped with aids (such as a low-EMF environment or avoidance of wireless devices) are disabilities if they

substantially limit a major life activity when active or unmitigated. Entities can't say a person isn't disabled by electromagnetic sensitivity just because a person lives in a low EMF environment and is fine there if they become ill when they are in a "normal" and higher EMF environment. Neither should there be such demand for studies, research, documentation, or expert witness testimony by complainants to support ones claims of the effects of an act of a commercial facility on their private lives and wellness.

"(a)(1) Disability means, with respect to an individual:

(i) A physical or mental impairment that substantially limits one or more of the major life activities of such individual;

(ii) (iii) Being regarded as having such an impairment as described in paragraph (f) of this section.

…

(c)(1) Major life activities include, but are not limited to:

(i) Caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, sitting, reaching, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, writing, communicating, interacting with others, and working; and

(ii) The operation of a major bodily function, such as the functions of the immune system, special sense organs and skin, normal cell growth, and digestive, genitourinary, bowel, bladder, neurological, brain, respiratory, circulatory, cardiovascular, endocrine, hemic, lymphatic, musculoskeletal, and reproductive systems. The operation of a major bodily function includes the operation of an individual organ within a body system."

It's time for the PUC to step up, follow suit and into their role of implementing the sentiments of what the DOJ and Congress wanted for citizens and end this burdensome "unreasonable" merry go round and ensure the service by the EDC/PPL for this complainant be the accommodation of his choice without further delay.

Therefore, these arguments and statements justify reconsideration of the Kline Order pursuant to Section 5.572 of the Code. I respectfully request that the Commission reconsider and reverse the Kline Order and allow the appropriate accommodations as requested so my family and I can be safe in our own home.

No attempt should be made to install a smart meter until after the reconsideration process or an appeal to the Commonwealth Court, if necessary.

Respectfully submitted,

John Kline

Exhibit – A

International Journal of
Molecular Sciences

MDPI

Review

Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder: How to Diagnose, Treat, and Prevent It

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Abstract: Since 2009, we built up a database which presently includes more than 2000 electrohypersensitivity (EHS) and/or multiple chemical sensitivity (MCS) self-reported cases. This database shows that EHS is associated in 30% of the cases with MCS, and that MCS precedes the occurrence of EHS in 37% of these EHS/MCS-associated cases. EHS and MCS can be characterized clinically by a similar symptomatic picture, and biologically by low-grade inflammation and an autoimmune response involving autoantibodies against O-myelin. Moreover, 80% of the patients with EHS present with one, two, or three detectable oxidative stress biomarkers in their peripheral blood, meaning that overall these patients present with a true objective somatic disorder. Moreover, by using ultrasonic cerebral tomosphygmography and transcranial Doppler ultrasonography, we showed that cases have a defect in the middle cerebral artery hemodynamics, and we localized a tissue pulsometric index deficiency in the capsulo-thalamic area of the temporal lobes, suggesting the involvement of the limbic system and the thalamus. Altogether, these data strongly suggest that EHS is a neurologic pathological disorder which can be diagnosed, treated, and prevented. Because EHS is becoming a new insidious worldwide plague involving millions of people, we ask the World Health Organization (WHO) to include EHS as a neurologic disorder in the international classification of diseases.

Keywords: electrohypersensibility; multiple chemical sensitivity; neurologic disease; oxidative stress; melatonin; O-myelin; inflammation; histamine; radiofrequency; extremely low frequency; electromagnetic fields

1. Introduction

The term electromagnetic hypersensitivity or electrohypersensitivity (EHS) was first proposed in 1991 by William Rea to identify the clinical condition of patients reporting health effects while being exposed to an electromagnetic field (EMF) [1]. This term was then used in 1997 in a report provided by a European group of experts for the European Commission to clinically describe this unusual pathology, which may imply EMF exposure [2].

In 2002, Santini et al. in France reported similar symptomatic intolerance in users of digital cellular phones and among people living near wireless communication base stations [3,4]. In 2004, because of the seemingly worldwide prevalence increase in EHS, the World Health Organization (WHO) organized an international scientific workshop in Prague to define and characterize EHS. Although not acknowledging EHS as being caused by EMF exposure, the Prague working group clearly defined EHS as "a phenomenon where individuals experience adverse health effects while using or

being in the vicinity of devices emanating electric, magnetic, or electromagnetic fields" [5]. WHO then acknowledged EHS as an adverse health condition [6]. However, according to a previous 1996 International Program on Chemical Safety (IPCS)-sponsored conference in Berlin on multiple chemical sensibility (MCS) [7], it was recommended to qualify such unknown new pathological conditions under the term of "idiopathic environmental intolerance (IEI)". Thus, following the Prague workshop, instead of using the term EHS, it was proposed to use the term "idiopathic environmental intolerance attributed to EMF (IEI-EMF)" to name this particular pathological condition, because of the lack of a proven causal link between EHS and EMF exposure, and no proven physiopathological mechanism linking EMF exposure with clinical symptoms.

That is indeed what WHO officially stated in its 2005 fact sheet 296 [6], indicating that "EHS resembles MCS, another disorder associated with low-level environmental exposure to chemicals … " and that because of "non-specific symptoms" and "no clear diagnostic criteria", this "disabling condition" could not be diagnosed medically. In addition, in 2002 and 2013, WHO classified extremely low frequencies (ELF) and radiofrequencies (RF) respectively as possibly carcinogenic (group IIB), meaning that EMFs may cause cancer. This past scientific evolution is summarized in Table 1.

Table 1. Electrohypersensitivity (EHS)/multiple chemical sensitivity (MCS) and cancer statements including those of the World Health Organization (WHO) or on behalf of WHO. COST—European action for co-operation in the field of science and technological research on biological effects of electromagnetic fields; EMF—electromagnetic field; IARC—international agency for research on cancer.

1996	Berlin: WHO-sponsored workshop; MCS classified as idiopathic environmental intolerance (IEI)
1997	Stockholm: Possible health implication of electromagnetic field exposure; a report prepared by a European group of experts for the European Commission
1998	Austria: COST 244 bis international workshop on EHS
1998	Atlanta (US): MCS 1999 consensus meeting
2002	IARC: Extremely low frequency (ELF) EMFs classified as possibly carcinogenic (Group IIB)
2004	Prague: WHO workshop; identification of idiopathic environmental intolerance attributed to EMF
2005	WHO: WHO fact sheet n° 292 aiming at defining EHS
2013	IARC: Radiofrequency (RF) EMFs classified as possibly carcinogenic (Group IIB)
2015	Brussels: Fourth Paris Appeal Colloquium; a focus on electromagnetic fields and EHS

However, since the 2005 WHO statement on EHS and a more recent 2014 WHO report on mobile phone exposure and public health [8], much clinical and biological progress has been made in identifying and characterizing EHS, as summarized during the international scientific consensus meeting on EHS and MCS which we organized in May 2015 in Brussels at the Royal Belgium Academy of Medicine [9].

Because we suspected that EHS prevalence was increasing worldwide, since 2009, we constituted and maintained a database which was registered by the French Committee for the protection of persons (CPP), under the registration number 2017-A02706-47, as well as in the European Clinical *Trials* Database (*EudraCT*), under the registration number 2018-001056-36. This database presently includes more than 2000 EHS and/or MCS cases. All the patients included in this series gave their informed consent for clinical and biological research investigations. In addition, all these patients were anonymously registered in the database.

By querying this database, we showed for the first time that EHS is frequently associated with MCS [10], and that EHS and MCS are characterized by a common similar clinical picture which can be identified objectively by the detection of similar biomarkers in the peripheral blood and urine [10,11], and by similar pulsometric abnormalities in the brain [10,12]. Thus it finally appears that EHS and MCS could in fact be two etiopathogenic aspects of a unique pathological disorder [10]. We would like here to overview our original data and discuss the possibility that EHS is part of a true pathologic neurologic disorder resulting from a comprehensive physiopathologic mechanism, in common with MCS. We conclude that EHS—whatever its causal origin—is becoming a worldwide plague. Thus, as

we showed that it can be diagnosed, treated medically, and eventually prevented, we ask WHO to include EHS in the international classification of diseases (ICD).

2. Demography

In a prospective study involving systematic face-to-face questionnaire-based interviews and clinical physical examinations of many patients constituting part of the database, we reported that EHS is a well-defined clinico-biological entity [10].

Table 2 presents the demographic data we obtained from the serial analysis of the first 726 consecutive cases included in the database. No children were included. Median and mean ages were 48 years for the EHS group, 48 and 47 years, respectively, for the MCS group, and 46 years for the EHS and MCS-associated group. Sex ratio shows a clear predominance of women among patients, reaching two-thirds in the EHS group and the MCS group, while it was three-quarters in the group of patients presenting with both disorders. This strongly suggests that women are genetically more susceptible than men to the environmental intolerance attributed to EMFs and/or chemicals.

Table 2. Age and sex ratio in EHS and/or MCS self-reported patients, according to Reference [10].

Demographic Data	EHS	MCS	EHS/MCS
n (%)	521 (71.7%)	52 (7.1%)	154 (21.2%)
Age (mean ± SD)	48.2 ± 12.9	48.5 ± 10.3	46.7 ± 11.2
Age (median (range))	48 (16–83)	47 (31–70)	46 (22–76)
Sex ratio (women/men)	344/177	34/18	117/37
Female (%)	66	65	76

3. Clinical Description

Table 3 presents the detailed symptomatic picture that we obtained during face-to-face interviews and clinical examinations for the groups of (1) EHS self-reported patients, (2) MCS self-reported patients, and (3) both disorder self-reported patients. Symptoms in patients with EHS were compared with those from a series of apparently healthy control subjects that showed no clinical evidence of EHS and/or MCS. As indicated in the table, EHS is characterized by the occurrence of neurologic symptoms including headache, tinnitus, hyperacusis, dizziness, balance disorder, superficial and/or deep sensibility abnormalities, fibromyalgia, vegetative nerve dysfunction, and reduced cognitive capability, including immediate memory loss, attention–concentration deficiency, and eventually tempo-spatial confusion. These symptoms were associated with chronic insomnia, fatigue, and depressive tendency, in addition to emotional lability and sometimes irritability. A major observation is that symptoms were repeatedly reported by the patients to occur each time they reported being exposed to presumably EMF sources, even of weak intensity, and to regress or even disappear after they left these presumed sources. With the exception of arthralgia and emotivity, which were observed at a similar frequency range in the control group, all clinical symptoms occurring in EHS patients were found to be significantly much more frequent than those in apparently normal controls.

Contrary to what was claimed from studies reporting clinical symptoms in EHS patients [2,5,6,13], these symptoms were not all subjective. In many cases, they were confirmed by family members; moreover, we were able to detect, at physical examination, a Romberg sign (objective posture test) in 5% of the cases and to observe the presence of cutaneous lesions in 16%. Overall, although many of these symptoms are considered as non-specific in the scientific literature, the general clinical picture resulting from their association and frequency strongly suggests that EHS can in fact be recognized and identified as a typical neurologic disorder as it is also the case for MCS and MCS-associated EHS.

Table 3. Clinical symptoms in EHS self-reported patients in comparison with those in normal controls and in comparison with those in MCS and EHS/MCS self-reported patients *, according to Reference [11].

Clinical Symptoms	EHS (%)	Normal Controls (%)	p **	MCS (%)	p ***	EHS/MCS (%)	p ****
Headache	88	0	<0.0001	80	0.122	96	0.065
Dysesthesia	82	0	<0.0001	67	0.0149	96	0.002
Myalgia	48	6	<0.0001	48	1	76	<0.0001
Arthralgia	30	18	0.067	24	0.611	56	<0.001
Ear heat/otalgia	70	0	<0.0001	16	<0.0001	90	<0.001
Tinnitus	60	6	<0.0001	35	<0.001	88	<0.0001
Hyperacusis	40	6	<0.0001	20	<0.001	52	0.118
Dizziness	70	0	<0.0001	52	0.0137	68	0.878
Balance disorder	42	0	<0.0001	40	0.885	52	0.202
Concentration/attention deficiency	76	0	<0.0001	67	0.210	88	0.041
Loss of immediate memory	70	6	<0.0001	56	0.040	84	0.028
Confusion	8	0	0.007	0	0.0038	20	0.023
Fatigue	88	12	<0.0001	72	0.0047	94	0.216
Insomnia	74	6	<0.0001	47	<0.0001	92	0.001
Depression tendency	60	0	<0.0001	29	<0.0001	76	0.022
Suicidal ideation	20	0	<0.0001	9	0.027	40	0.003
Transitory cardiovascular abnormalities	50	0	<0.0001	36	0.046	56	0.479
Ocular deficiency	48	0	<0.0001	43	0.478	56	0.322
Anxiety/panic	38	0	<0.0001	19	0.003	28	0.176
Emotivity	20	12	0.176	16	0.461	20	1
Irritability	24	6	<0.001	14	0.071	24	1
Skin lesions	16	0	<0.0001	14	0.692	45	<0.0001
Global body dysthermia	14	0	<0.0001	6	0.236	8	0.258

* These data result from the clinical analysis of 150 consecutive clinically evaluable cases issued from the database including an already published series of EHS and/or MCS patients who were investigated for biological markers [10]. Symptoms in EHS self-reported patients were compared with symptoms obtained from a series of 50 apparently normal subjects used as controls. These symptoms were also compared to those occurring in MCS and EHS/MCS self-reported patients. Percentage of patients with symptoms were compared by using the chi-square independence test. ** Statistical difference between EHS self-reported patients and normal controls. *** Statistical difference between EHS self-reported patients and MCS self-reported patients. **** Statistical difference between EHS self-reported patients and EHS/MCS self-reported patients.

Table 3 reveals that between EHS and MCS there is no statistically significant difference in types and frequencies of clinical symptoms for headache, myalgia and arthralgia, balance disorder, concentration/attention deficiency, emotivity and irritability, skin lesions and global body dysthermia, whereas dysesthesia, ear heat/otalgia, tinnitus, hyperacusis, dizziness, loss of immediate memory, insomnia and fatigue as well as depression tendency and suicidal ideation appear to be statistically more frequent in EHS than in MCS. Moreover, in the case of EHS associated with MCS, most of the symptoms—such as headache, dysesthesia, myalgia and arthralgia, tinnitus, and, above all, cognitive capability, including loss of immediate memory, concentration/attention deficiency, and tempo-spatial confusion—were found to be significantly more frequent than in EHS alone, suggesting that the presence of an additional chemical intolerance component to the intolerance attributed to EMF exposure is associated with a more severe pathology. This was especially the case for skin lesions which were found in 45% of the cases, as well as for physical and mental suffering and depressive tendency with underlying suicidal ideation in 40%.

Note that cutaneous lesions were more frequent on the superior members than on the inferior members of the patients, and more frequent on the hands, particularly on the hand which held the mobile phone (as exemplified in Figure 1A). Note also that the cutaneous lesions were not only more frequent in the group of patients with EHS- and MCS-associated disorders (45%) than in the group of

patients with only EHS (16%), but also that they were more extensive and persistent in the cases of both associated disorders than in the case of EHS alone (Figure 1B).

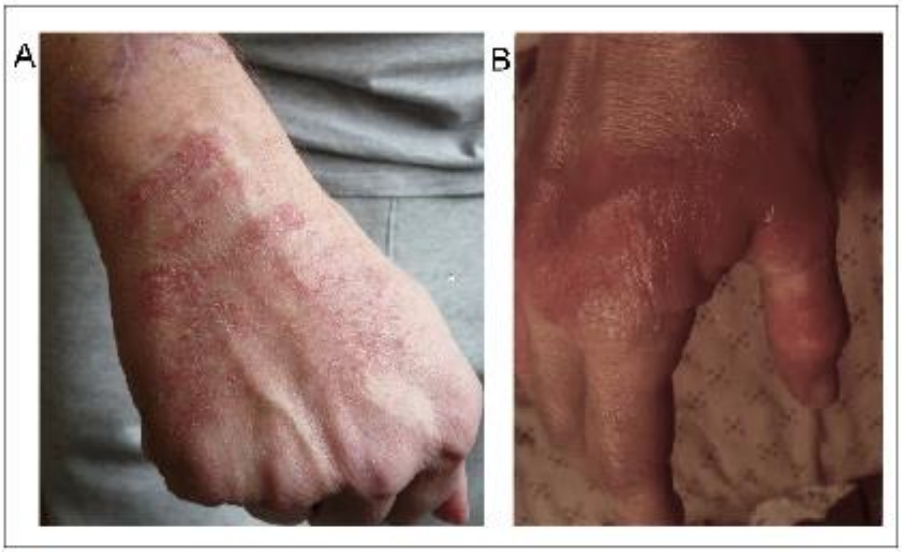

Figure 1. Examples of skin lesions observed on the hand of an EHS-bearing patient (**A**) and of an EHS/MCS-bearing patient (**B**). (Photographs are issued from the database).

These clinical observations strongly suggest that EHS and EHS/MCS are objective somatic disorders, which can neither be claimed as originating from some psychologic or psychiatric-related conditions, nor from nocebo effects [11] (see further).

4. Identification of Biomarkers

On the basis of previously published experimental data, we selected and identified several biomarkers in the peripheral blood and urine of EHS and/or MCS patients which can allow physicians to objectively characterize EHS and MCS as true somatic pathological disorders [10], discounting the hypothesis that EHS and MCS could be caused by a psychosomatic or nocebo-related process [11]. As indicated in Table 4, there is a similar increase in mean level values of low-grade inflammation-related biomarkers in the peripheral blood of patients with EHS, MCS, or both associated disorders. In addition, as far as frequency is concerned, we found hypersensitive C reactive protein (hs-CRP) to be increased in 12–15% of the cases, histamine in 30% to 40%, immunoglobulin E (IgE) in 20% to 25%, and heat-shock protein 27 (Hsp 27) and Hsp 70 in 12% to 30%. Note that, among these markers, IgE and histamine were found to be increased in patients with no proven allergy; thus, in the case of no associated allergy, histamine appears to be the most frequently involved biomarker in EHS, as well as in MCS, suggesting a low-grade inflammatory process is involved in the genesis of these two disorders. Consequently, it is believed that, as an inflammation mediator, histamine could play a major key contributing role in the physiopathologic mechanism which may account for the occurrence of the two disorders [11,14] (see further). Note also that, with the exception of Hsp 70, which was found to be less frequently increased in the MCS group, there was no significant difference between the three groups of patients for the percentage of patients with values above normal, nor any significant difference in mean increased values in comparison with normal values for all biomarkers in the three groups studied, meaning that EHS, MCS, and the association of both disorders may share a common low-grade inflammation-related physiopathologic mechanism for genesis.

Table 4. Increase in low-grade inflammation-related biomarker mean blood level values in the peripheral blood of patients with EHS and/or MCS, according to References [9,10]. SE—standard error; hs-CRP—hypersensitive C reactive protein; IgE—immunoglobulin E; Hsp—heat-shock protein.

	Patient Groups							
Marker Normal Values	**EHS Mean ± SE**	**Above Normal (%)**	**MCS Mean ± SE**	**Above Normal (%)**	***p****	**EHS/MCS Mean ± SE**	**Above Normal (%)**	***p*** **
hs-CRP < 3 mg/L	10.3 ± 1.9	15	5.3 ± 1.7	12	0.50	6.9 ± 1.7	14.3	0.36
Histamine < 10 nmol/L	13.6 ± 0.2	37	23.5 ± 4.5	33	0.91	13.6 ± 0.4	41.5	0.52
IgE < 100 UI/mL	329.5 ± 43.9	22	150.9 ± 18.3	20	0.23	385 ± 70	24.7	0.53
Hsp 70 < 5 ng/mL	8.2 ± 0.2	18.7	5.9 ± 0.5	12	0.03	8 ± 0.3	25.4	0.72
Hsp 27 < 5 ng/mL	7.3 ± 0.2	25.8	6.8 ± 0.1	6 ***	0.59	7.2 ± 0.3	31.8	0.56

* Comparison between the EHS and MCS groups of patients for marker mean level values was done using the two-tailed *t*-test. Except for Hsp 70, there is no statistically significant difference between EHS and MCS patients for increased mean level values of the different biomarkers analyzed, suggesting that EHS and MCS share a common physiopathological mechanism for genesis. ** Comparison between the EHS and EHS/MCS groups of patients by using the two-tailed *t*-test. There is no statistically significant difference between EHS and EHS/MCS patients for increased mean level values of the different biomarkers analyzed. *** With the exception of MCS, for which there is a statistically significantly lower frequency percentage value for Hsp 27, the frequency percentage values obtained in EHS and EHS/MCS for all the other investigated parameters do not differ significantly on the basis of the chi-square independence test.

Moreover, as indicated in Table 5, we were able to show that, in peripheral blood, there is an increase in S100B protein in 15–20% of the patients and an increase in nitrosative stress-related nitrotyrosine (NTT) in 8–30% in the EHS and/or MCS groups, suggesting that these biomarkers may reflect opening of the blood–brain barrier (BBB) in these patients, whatever the patient group considered, since it was shown that S100B protein [15,16] and nitrotyrosine [17–20] are markers associated with BBB opening. In addition, we detected the presence of autoantibodies against O-myelin in about 20% of all cases, whether EHS, MCS or both; meaning that an autoimmune response against the white matter of the nervous system occurres in patients; a finding that may in fact be the consequence of the occurrence of oxidative/nitrosative stress [10,21].

Table 5. Increase in mean blood level values of peripheral blood S100B protein, nitrotyrosine (NTT), and O-myelin autoantibodies in EHS and/or MCS patients, according to References [10,11].

	Patient Groups							
Markers Normal Values	**EHS Mean ± SE**	**Above Normal (%)**	**MCS Mean ± SE**	**Above Normal (%)**	***p****	**EHS/MCS Mean ± SE**	**Above Normal (%)**	***p*** **
S100B < 0.105 µg/L	0.20 ± 0.03	14.7	0.25 ± 0.05	21.15	0.56	0.17 ± 0.03	19.7	0.69
NTT * > 0.9 µg/ml	1.36 ± 0.12	29.7	1.26 ± 0.13	8	0.85	1.40 ± 0.12	28.9	0.86
O-myelin (qualitative test)	Positive	22.8	Positive	13.6	_	Positive	23.6	_

* Comparison between the EHS and MCS groups of patients using the two-tailed *t*-test. There is no statistically significant difference between the two groups of EHS and MCS patients for increased mean level values of the two different biomarkers analyzed, suggesting that EHS and MCS share a common physiopathological mechanism for genesis. ** Comparison between the EHS and EHS/MCS groups of patients using the two-tailed *t*-test. There is no statistically significant difference between EHS and EHS/MCS patients for increased mean level values of the different biomarkers analyzed, suggesting here too that EHS and MCS share a common physiopathological mechanism for genesis.

Moreover, more recently, we measured different oxidative and nitrosative stress-related biomarkers such as thiobarbituric acid reactive substances (TBARS), oxidized glutathione (GSSG), and NTT in the peripheral blood of EHS patients. As reported in Figure 2, we found that nearly 80% of EHS patients presented with an increase in oxidative/nitrosative stress-related biomarkers—more precisely, with only one of these three studied biomarkers in 43% of the patients, two of these biomarkers in 21% of them, and all three in 15% [22]. This clearly indicates that, in addition to low-grade inflammation and an anti-white matter autoimmune response, EHS can also be diagnosed by the presence of oxidative/nitrosative stress.

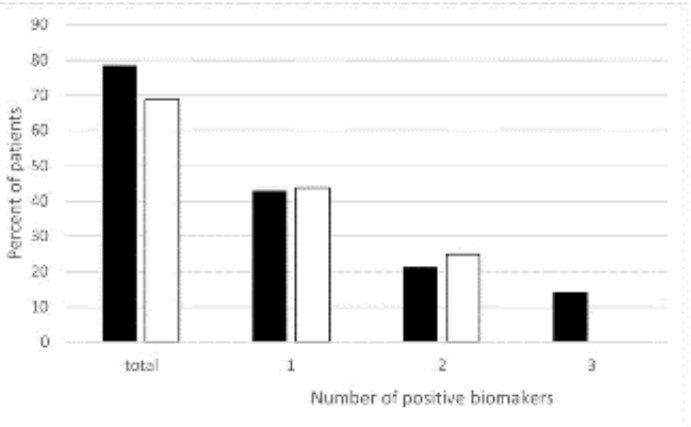

Figure 2. Percentage of EHS self-reported patients having positive thiobarbituric acid reactive substances (TBARS), oxidized glutathione (GSSG), and/or NTT oxidative stress biomarkers measured in the peripheral blood, according to Reference [22]. ■ Corresponds to NTT, TBARS, and GSSG, i.e., all three biomarkers measured in 14 of the 32 included patients. □ Corresponds to TBARS and GSSG analyzed in all 32 included patients. "Positive" biomarkers correspond to patients having one, two, or three markers with levels above the upper normal limits, and "total" corresponds to patients having at least one positive biomarkers, i.e., having one, two, or possibly three positive biomarkers.

Finally, we also found that, in comparison with normal reference values, the 24-h urine 6-hydroxymelatonin (6-OHMS)/creatinine ratio was normal or significantly decreased in 88% of cases, while, due to a still unexplained process, it was significantly increased in 12%, whatever the group of patients considered. 6-OHMS is a melatonin metabolite. Decrease in melatonin production as a consequence of prolonged EMF exposure was experimentally evidenced both in animals and in humans [23,24]. However, since EMF exposure was also reported not to alter melatonin synthesis and secretion [25], an alternative plausible explanation could be that a decrease in the excretion of 6-OHMS in the urine may result from a decrease in melatonin metabolic bioavailability due to its increased intake and utilization of melatonin as a free radical scavenger [26,27]. This indeed could be the case in patients with a decrease in the 24-h urine 6-OHMS/creatinine ratio level, since, as shown above, most EHS patients present with oxidative/nitrosative stress. Thus, a decrease in 6-OHMS in the urine may in fact be a consequence of the antioxidative stress effect of this hormone rather than its decreased synthesis in the pineal gland. Consequently, such reduction in bioavailability may contribute not only to clinical sleep disturbance in these patients, but also to a decrease in host defense mechanisms, possibly putting these patients at risk of neurodegenerative disease and cancer [28,29].

Moreover, the development of oxidative/nitrosative stress-related autoimmune response may also contribute to weakening the putative protective health effect of the chaperone proteins Hsp 70 and Hsp 27 [30]. There is presently no clear explanation why, in 12% of the cases, instead of having a normal or significant decrease in the 24-h urine 6-OHMS/creatinine ratio, this ratio was significantly increased in comparison with normal control values. As indicated in Table 6, this may be due in some cases to an increased production of serotonin in the brain, since serotonin is a precursor neurotransmitter of melatonin.

As indicated in Table 6, changes in neurotransmitter levels revealed that EHS is associated with different abnormal neurotransmitter profiles, confirming EHS is a well-established new brain-related neurologic disorder.

Table 6. Preliminary unpublished data based on the measurement of neurotransmitters and their metabolites in the urine of 42 EHS-bearing patients. 3-4 DOPAC—3,4-Dihydroxyphenylacetic acid.

Neurotransmitters	Patients	%
Dopamine increase	17/42	31
3-4 DOPAC decrease	18/42	43
Noradrenaline increase	11/42	26
Adrenaline increase	8/42	19
Adrenaline decrease	12/42	22
Serotonin increase	4/42	9.5
Serotonin decrease	5/42	12

5. Radiological Identification of Cerebral Neuro-Vascular Abnormalities

Classical brain imaging techniques including brain computerized tomography (CT) scans, brain magnetic resonance imaging (MRI), and brain angioscans are usually normal in EHS patients and in MCS or EHS/MCS patients, meaning that the normality of these investigations is not an argument against the diagnosis of these pathological disorders. Fortunately we have shown that development and use of other imaging techniques could be greatly helpful to increase our ability of objectively characterizing EHS and MCS, should they show abnormal function. In fact, as indicated in Table 7, by using transcranial Doppler ultrasound (TDU) in patients with EHS, we showed a decrease in the mean pulsatility index in one or both middle cerebral arteries, i.e., for one artery in 25% and 31% of the cases respectively for the right and left artery, and for both arteries in 50%. Moreover, for the dual EHS/MCS group of patients, it was for one artery in 20% of the cases and for both arteries in 50%. In addition, as far as resistance in the blood flow (BBF) is concerned, we found that, in EHS patients, BBF resistance was increased for one artery in 6.25% of the cases and for both arteries in 18.75%, while in EHS/MCS patients, it was 5–10% for one artery and 25% for both arteries. Note also that mean blood flow velocity was below normal values in 9.75% to 40% of the cases, while it was above normal values in 5% to 18.75%, depending on the EHS and EHS/MCS group considered (see Table 7). This suggests that, in EHS and/or MCS, BBF may be decreased in one or both of these brain arteries.

Table 7. Results of resistance index, pulsatility index, and mean flow velocity in comparison with normal values in the right and left middle cerebral arteries using transcranial Doppler ultrasound in 32 EHS cases and 20 EHS/MCS cases (unpublished data).

				EHS $n = 32$					
	Normal Value	Mean ± SE		Below Normal (%)			Above Normal (%)		
	Right and Left	Right	Left	Right Only	Left Only	Both	Right Only	Left Only	Both
Resistance index	<0.75	0.62 ± 0.03	0.65 ± 0.04	_	_	_	6.25	6.25	18.75
Pulsatility index	>0.60	0.55 ± 0.02	0.55 ± 0.03	25	31.25	50	_	_	_
Mean flow velocity	62 ± 12	59.56 ± 5.98	61.35 ± 5.27	9.75	9.75	31.25	3.12	9.25	18.75
				EHS/MCS $n = 20$					
	Normal values	Mean ± SE		Below Normal (%)			Above Normal (%)		
	Right and Left	Right	Left	Right only	Left only	Both	Right only	Left only	Both
Resistance index	<0.75	0.79 ± 0.09	0.64 ± 0.04	_	_	_	5	10	25
Pulsatility index	>0.60	0.48 ± 0.03	0.61 ± 0.02	20	0	65	_	_	_
Mean flow velocity	62 ± 12	53.03 ± 9.09	51.77 ± 7.63	20	20	40	10	10	5

Moreover, by using ultrasonic cerebral tomosphygmography (UCTS) applied to the temporal lobes [12], we showed there is a significant decrease in mean pulsometric index in the middle cerebral artery-dependent tissue areas of these lobes, especially in the capsulo-thalamic area, which corresponds to the limbic system and the thalamus [12]. As exemplified in Figure 3, this tissue hypo-pulsation—mainly detected in the capsulo-thalamic area of these lobes—suggests that EHS and/or MCS are associated with a capillary BBF decrease in these two brain structures, thus leading to the hypothesis that they may be associated with some vascular and/or neuronal dysfunction [10–12]. Although these abnormalities are not specific, since they may be similar to those found in Alzheimer's disease and other neurodegenerative disorders, we recently confirmed that UCTS could presently be one of the most accurate imaging techniques to be used to diagnose EHS and/or MCS and to follow objectively treated patients [12].

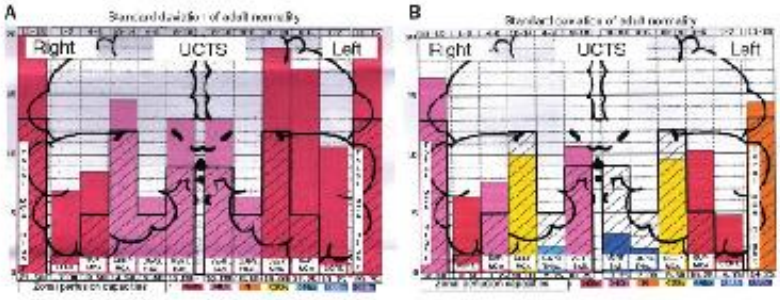

Figure 3. Examples of diagrams obtained from the database by using ultrasonic cerebral tomosphygmography (UCTS), exploring the global centimetric ultrasound tissue pulsatility in the two temporal lobes of a normal subject (**A**) and of an EHS self-reported patient (**B**), according to References [11,12]. Measurements are expressed as pulsometric index (PI). Note that, in A and B, mean values of PI in each explored area are recorded from the cortex to the internal part of each temporal lobe (i.e., from left to right for the right lobe, and from right to left for the left lobe). In addition, note that, in A (normal subject), all values are over the median normal PI values, whereas, in B (EHS self-reported patient), values in the so called capsulo-thalamic areas (the fifth and the second column for the right and left temporal lobes, respectively) are significantly under the median normal values, suggesting that the limbic system and the thalamus in each temporal lobe may be involved in EHS, as exemplified in this patient.

It appears, however, that these brain abnormalities are not restricted to the limbic system and the thalamus, since, by using TDU as indicated above, we showed that, in EHS and/or MCS patients, BBF in the middle cerebral arteries may be abnormal. Moreover, by using functional MRI (fMRI) in EHS patients exposed chronically to extremely low-frequency (ELF) radiation, regional BBF changes were also reported by Heuser and Heuser, but mainly in the frontal lobes, as an abnormal default mode network (DMN) (particularly as hyper-connectivity of this DMN), in association with a decrease in cerebral BBF and metabolic processes in the two so far individualized fragment hyper-connected components [31]. For example, in Figure 4, abnormal DMN is represented with fragmented hyper-connectivity of the anterior component and posterior component, which may lead to decreased BBF and/or metabolism in the bi-frontal lobes.

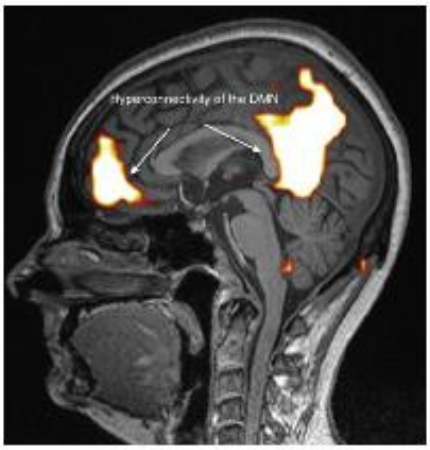

Figure 4. Abnormal functional MRI brain scan in patients complaining of EHS after long-term exposure to EMF, according to Reference [31].

6. Diagnostic Criteria

On the basis of the above clinical, biological, and radiological reported investigations, it appears that there is presently sufficient comprehensive and relevant data allowing the objective characterization and identification of EHS as a well-defined new neurologic pathological disorder. As a result, patients who self-report that they suffer from EHS should be investigated utilizing presently available objective tests, including the use of the above-reported blood and urine biomarkers and imaging techniques.

At a clinical level, isolated symptoms such as headache, tinnitus, dizziness, or cognitive defects, although they may be referred by the patients as being due to EMF or chemical exposure, are indeed not sufficient for the diagnosis to be made, as they may reflect another pathology. Clinical arguments for EHS could nevertheless be the following: (1) absence of known pathology accounting for the observed clinical symptoms; (2) characteristic association of symptoms such as those we identified, with the association of headache, tinnitus, hyperacusis, dizziness, loss of immediate memory, and attention/concentration deficiency being the most characteristic and reproducible; (3) reproducibility of symptoms under the said influence of EMFs; (4) regression or disappearance of symptoms in the case of said EMF avoidance; (5) finally and most importantly, the association with MCS. As we showed that MCS is associated with EHS in 30% of the cases, and as MCS was well defined during a 1999 international consensus meeting [32], this latter association may in fact be the best clinical criterion for the diagnosis of EHS.

However, because many of these clinical criteria are subjective, they are not sufficient to objectively prove the disease and, thus, establish the diagnosis. Among biological markers, histamine in the blood is presently the best available marker in the case of no associated allergy and the easiest to measure routinely in medical practice. Moreover, detection in the blood of an increase in protein S100B and oxidative/nitrosative stress-related biomarkers such as GSSG and NTT may also be objective contributing elements for the diagnosis. Note, however, that, in 30% of the cases, there were no positive detectable biomarkers in the blood; thus, in addition to the availability of clinical criteria, the EHS diagnosis could be made by using imaging techniques, such as TDU, fMRI, and, if possible, UCTS. Overall, by using this approach, we were able to objectively diagnose EHS in about 90% of EHS self-reported patients.

7. Treatment and Prognostic Evolution

There is, at the moment, no recognized standardized treatment of EHS. There are, however, some treatments that could be indicated, on the basis of biological investigations. We showed, for example, that patients with EHS present frequently with a profound deficit in vitamins and trace elements, especially in vitamin D and zinc, which should be corrected [10,11,22]. Anti-histaminics should also be used in the case of increased histamine in the blood. Furthermore, antioxidants such as glutathione and, more specifically, anti-nitrosative medications should also be used in case of oxidative/nitrosative stress. Moreover, as exemplified in Figure 5, we showed that natural products such as fermented papaya preparation (FPP) and ginkgo biloba can restore brain pulsatility in the various middle cerebral artery-dependent tissue areas of temporal lobes, thereby improving brain hemodynamics and, consequently, brain oxygenation [33]. Since FPP was shown to possess some antioxidant, anti-inflammation, and immune-modulating properties [34–36], we recommend the use of this widely available natural product.

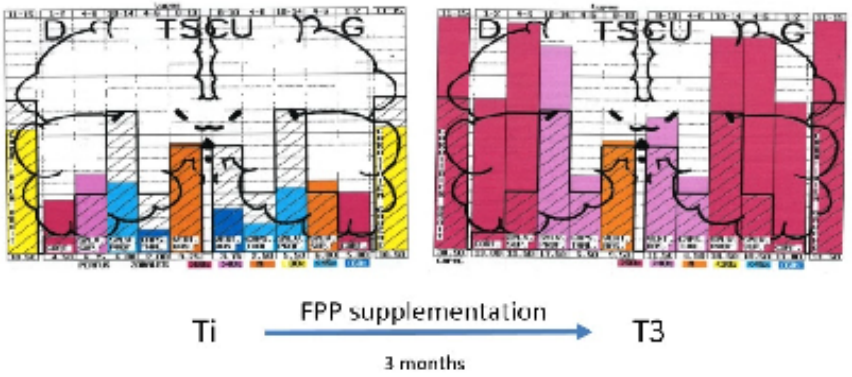

Figure 5. Example of diagrams obtained from the database by using UCTS exploring the global centimetric ultrasound pulsatility in the two temporal lobes of an EHS subject at inclusion (Ti) and three months later (T3) after fermented papaya preparation (FPP) supplementation (9 g per day in two divided doses), according to Reference [33].

In the case of no treatment and no protection against environmental stressors such as EMF and multiple chemicals, EHS may evolve toward some neurodegenerative and psychiatric disorders, possibly including some seemingly Alzheimer's disease-related states. However, in treating and protecting patients as soon as possible, we never observed the occurrence of true Alzheimer's disease in any patient included in the database. By contrast, regression and even disappearance of symptoms of intolerance may occur after treatment and protection of patients. However, in our experience and to our knowledge, hypersensitivity to EMF and/or MCS-related chemical sensitivity never disappears, meaning – unlike symptomatic intolerance – EHS and MCS appear to be associated with some irreversible neurologic pathological state, requiring strong and persistent prevention. So, contrary to some recent claims, we believe these disorders cannot be merely reduced to some type of functional impairment.

8. Proposed Physiopathological Mechanism

In its 2005 official statement on EHS, WHO indicated there is "no scientific basis to link EHS symptoms to EMF exposure" meaning there is no accepted physiopathological mechanism to link environmental cause to disease. This is no longer the case. The basic low-grade inflammation and oxidative/nitrosative stress-related states we showed in EHS patients [10,11,22] are remarkable since they confirm the detrimental health effects of (1) non-thermal or weak thermal non-ionizing

radiation, which were proven experimentally in animals [37–39] and in humans [11] exposed to different environmental stressors including ELF and RF EMFs, and (2) multiple man-made environmental chemicals [40–42], especially in the brain [43,44].

Figure 6 summarizes the different steps of the model we have so far been able to construct from the presently available published data, including our own. On the basis of the inflammation and oxidative/nitrosative stress processes which we evidenced in EHS and/or MCS patients, this model accounts for the mechanisms via which physiopathological effects could take place in the brain and, consequently, how EHS and/or MCS genesis can occur.

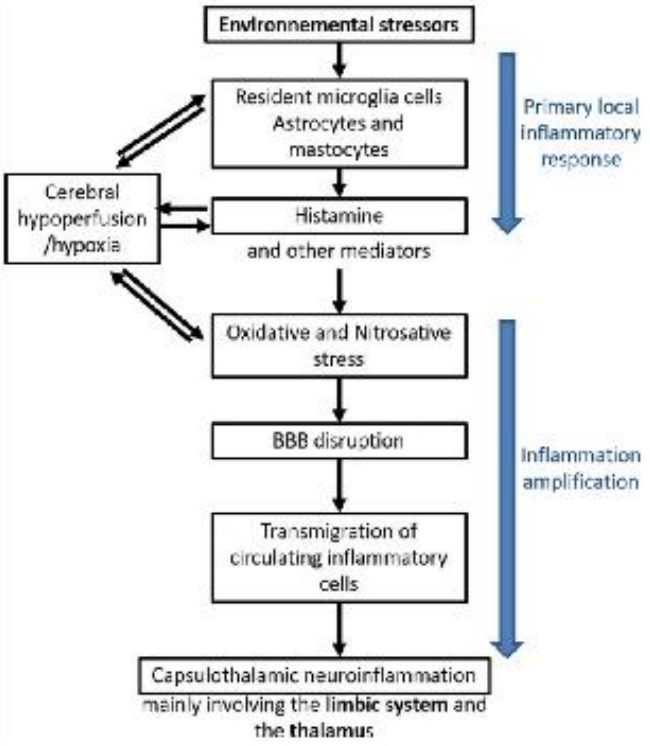

Figure 6. EHS/MCS physiopathological model based on low-grade neuroinflammation and oxidative/nitrosative stress-induced blood–brain barrier disruption, according to Reference [10].

In a first step, there could be an initial local inflammatory response to environmental stressors, whatever they may be. Resident microglia cells, astrocytes, and mastocytes could be the first cells in the brain locally involved in the inflammatory process, releasing inflammatory mediators such as histamine. On the basis of our data [10–12,22,33], it is speculated that histamine is a key mediator contributing to the induction of oxidative/nitrosative stress and, consequently, to cerebral hypoperfusion, thereby leading to some local cerebral hypoxia.

In a second step, amplification of inflammation could occur, including oxidative/nitrosative stress-related BBB disruption, allowing transmigration of circulating inflammatory cells from the blood to the brain. Finally, neuroinflammation in the brain would occur, mainly involving the capsulo-thalamic area of temporal lobes, i.e., the limbic system and the thalamus.

The major interest of this comprehensive physiopathological model is that it can explain the main clinical symptoms occurring in EHS and/or MCS patients, since the limbic system involvement may

account for both the emotional and cognitive pathological alterations (in particular memory loss), while the thalamic involvement may explain sensibility-related abnormalities, both superficial and deep. Naturally, the possible extension of neuroinflammation into the frontal lobes and possibly into the hypothalamus [45] may, in addition, account for the other associated clinical symptoms.

9. Etiopathogenesis and Prevention

The causal origin of EHS is still debated, and the present current institutional message is that there is no proof that EHS genesis is causally related to EMF exposure. There is, however, great confusion in the present scientific literature in addressing this problem, since there is presently no clear distinction between the cause of clinical symptoms occurrence in EHS patients, i.e., after EHS has already occurred, and the environmental causal origin of EHS itself. In fact, as reported in Table 8, by querying the database and analyzing retrospectively previous exposure to EMFs and/or chemicals in EHS- and EHS/MCS-bearing patients, we found there are presently several direct and indirect arguments which strongly suggest that EMF exposure and even chemicals may cause or contribute to cause EHS.

Table 8. Clinical analysis of self-reported excessive presumed EMF and chemical exposure preceding the occurrence of electrohypersensibility (unpublished data). DECT—digital enhanced cordless telecommunications; RF—radiofrequency; ELF—extremely low frequency.

Sources	EHS (%)	Frequency Bands
Mobile phone	37	RF
Mobile phone/DECT	8	
DECT	7	
Cathode-ray screen	9	
WiFi	16	
Relay antenna towers	3	
Energy-saving lamps/mobile phone *	1.4	RF and ELF
High-voltage power lines	2.7	ELF
Power transformer	1.7	
Railway	0.8	
Chemicals	11	
Idiopathic **	2.4	

* Presumed excessive source exposure concern both low frequencies (LF) and radiofrequencies (RF); ** possible genetic susceptibility.

Moreover, a further distinction should be made between the general term of intolerance, which refers to the clinical symptoms and/or the biological abnormalities occurring in a particular environmental situation, and the term hypersensitivity, which should in fact be defined as a particular endogenous physiopathological state characterized by a decrease in the environmental tolerance threshold to such a critical point that patients become intolerant to low-dose stressors. Such a distinction is already made in medicine as, for example, the individualization of atopy in allergic patients.

Thus, if we agree on the distinction between the concept of intolerance and that of EHS, EHS should be characterized by definition as a particular decrease in the intolerance threshold according to which patients become intolerant to low-dose-intensity EMF exposure, while MCS (as already indicated by the MCS consensus meeting report in 1999 in Atlanta) was defined by a similar physiopathological state in which patients become intolerant to low-dose multiple chemicals [32]. This distinction may explain why most studies using provocation tests aiming to reproduce the clinical symptoms which may occur under EMF exposure in EHS self-reported patients report negative findings. Indeed, these negative results may in fact be due to different, unacceptable scientific flaws: (1) the lack of objective inclusion criteria, because objective biomarkers were not used to define EHS in so-called EHS-self reported patients; (2) EHS patients may be sensitive to certain frequencies and not necessarily to others; (3) duration of exposure was generally too short and assessment too early; (4) association with MCS

was not considered; (5) as reported above, EHS patients have cognitive defects and, thus, can make mistakes in distinguishing EMF exposure from sham exposure; (6) and above all, patients may respond positively in the case of sham exposure because of a decrease in environmental tolerance threshold, as well as because of psychologic conditioning from their past history of suffering.

Hence, on this basis, and because of the experimental evidence provided by studies in animals [37–39,43,44] and in humans [11,14,23,24] have shown the detrimental impact of EMF on health we believe, there is presently no sufficiently robust scientific data to refute a role of EMF exposure in inducing the previously described clinical symptoms and biological alterations in EHS patients.

Therefore, the causal origin of EHS should be established with a different scientific approach. RF and ELF were found to cause persistent adverse biological effects not only in animals [46,47] but also in plants [48,49] and microorganisms [50]. Here too, such observations certainly dismiss the hypothesis of a nocebo effect as the initial cause of EHS. In fact, the inflammation and oxidative/nitrosative states we showed in EHS patient are remarkable since they confirm the data obtained experimentally in animals exposed to these two types of non-ionizing frequencies [37–39], especially in the brain [43,44]. Furthermore, the limbic system-associated capsulo-thalamic abnormalities that we showed to characterize these patients [12,33] may likely correspond to the hippocampal neuronal alterations caused by EMF exposure in rats [51–53].

We therefore consider that the biological effects we observed in EHS patients may be due to both the pulsed and the polarized characteristics of man-made EMF emitted by electric or wireless technologies, as opposed to terrestrial non-polarized and continuously emitted natural EMFs [54–56].

In addition, as indicated in Table 9, we showed that, in 30% of the EHS cases, EHS was associated with MCS, with MCS preceding the occurrence of EHS in 37% of these EHS/MCS-associated cases; meaning that in this group of patients, EHS evolved toward MCS in 63% of the cases. As reported in Table 8, we thus speculate that man-made environmental chemicals may also be causally involved in EHS genesis in around 11% of the cases.

Table 9. Percentage of MCS patients who later suffered from EHS and vice versa.

	Total EHS/MCS Patients	Total EHS Patients Including EHS/MCS Patients *
Percentage of MCS patients that later suffered from EHS	37	11
Percent of EHS patients that later suffered from MCS	63	19

* EHS/MCS patients represent 30% of the total number of EHS patients.

These various considerations should not be neglected, since to avoid risks, knowledge of them could lead to protective measures in EHS and/or MCS patients. Such measures should include as much as possible EMF and chemical avoidance, use of anti-EMF clothes, and earthing-related electric charge detoxication. In addition, public preventive measures for the most vulnerable people—particularly pregnant women, infants, children, and adolescents—should be taken by limiting or even totally avoiding the use of wireless technology in these conditions. Such protective measures should also be taken and carried out in vulnerable patients, i.e., in cardiac patients with pacemakers, in patients with auditive prothesis, and in patients with neurodegenerative diseases.

10. The Worldwide Health Plague

Another argument incriminating the role of new wireless technology and possibly man-made chemicals introduced in the environment [57,58] is that, as indicated in Table 10, the increase in EHS prevalence is not restricted to a single country but is presently a worldwide plague, which started as soon as these industrial technologies became widespread. Prevalence of EHS occurrence is estimated

to range from 0.7% to 13.3%, mainly affecting about 3% to 5% of the population in many countries (Table 10), meaning that millions of people may in fact be affected by EHS worldwide.

Table 10. Estimated prevalence of people with self-reported EHS in different worldwide countries. USA—United States of America.

Country	Date	Sample Size	People Contribution Rate (%)	Estimated % of People with EHS	References
Sweden	1997	15,000 (19–80) *	73	1.5	Hillert et al., 2002 [59]
Sweden	2010	3406	40	2.7	Palmquist et al., 2014 [60]
Swiss	2004	2048 (>14) *	55.1	5	Schreier et al., 2006 [61]
Swiss	2008	1122 (30–60) *	37	8.6	Roosli et al., 2010 [62]
Swiss	2009	1122 (30–60) *	37	7.7	Roosli et al., 2010 [62]
Germany	2004	30,047	58.6	10.3	Blettner et al., 2009 [63]
Germany	2004	30,047	58.4	8.7	Kowall et al., 2012 [64]
Germany	2006	30,047	58.4	7.2	Kowall et al., 2012 [64]
USA (California)	1998	2072	58.3	3.2	Levallois et al., 2002 [65]
Finland	2002	6121	40.8	0.7	Koppinen et al., 2009 [66]
Great Britain	Before 2007	3633	18.2	4	Eltiti et al., 2007 [67]
Taiwan	2007	1251	11.5	13.3	Tseng et al., 2011 [68]
Austria	Before 2008	460	88	3.5	Schröttner and Leitgeb, 2008 [69]
Japan	Before 2009	2472	62.3	1.2	Furubayashi et al., 2009 [70]
Holland	2011	5789	39.6	3.5	Baliatsas et al., 2014 [71]
Holland	Before 2013	1009	60	7	Vahn Dongen et al., 2014 [72]

* When precised, age intervals of included patients are indicated in brackets.

Furthermore, although these reported EHS prevalence figures are only estimations, not critically evaluated due to a lack of objective criteria to clearly define EHS, it is possible—as speculated in Figure 7—that the EHS prevalence will continue to grow in the future, in as much as the manufacture of wireless technology and industrial chemicals will continue to develop.

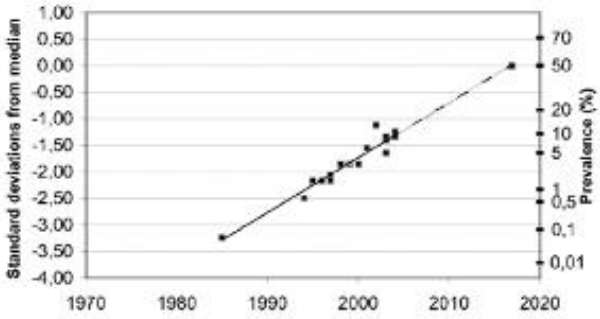

Figure 7. Estimated prevalence (%) of people around the world who consider themselves to be electrohypersensitive, plotted over time in a normal distribution graph, according to Reference [73].

11. Conclusions

In summary, we showed that there are presently sufficient clinical, biological, and radiological data for EHS to be acknowledged as a well-defined, objectively identified, and characterized pathological neurologic disorder. As a result, patients who self-report they suffer from EHS should be diagnosed and treated on the basis of presently available biological tests, including the detection of peripheral blood and urine biomarkers and the use of imaging techniques such as fMRI, TDU, and, when possible, UCTS. Moreover, because we showed for the first time that EHS is frequently associated with MCS and that both clinico-biological entities may be associated with a common physiopathological mechanism for genesis, it clearly appears that they can be identified as a unique neurologic pathological syndrome,

whatever their causal origin. Moreover; as it was shown that MCS genesis may be attributed to toxic chemical exposure, and EHS genesis to potentially excessive EMF and/or chemical exposure; protective measures against these two environmental stressors should be taken.

Whatever its causal origin and mechanism of action, EHS should therefore be from now on recognized as a new identified and characterized neurological pathological disorder. As it is already a real health plague potentially involving millions of people worldwide it should be acknowledged by WHO, and thus be included in the WHO ICD. As stated during the international scientific consensus meeting on EHS and MCS that we have organized in 2015 in Brussels, scientists unanimously asked WHO to urgently assume its responsibilities, by classifying EHS and MCS as separate codes in the ICD; so as to increase scientific awareness of these two pathological entities in the medical community and the general public, and to foster research and train medical practitioners to efficiently diagnose, treat, and prevent EHS and MCS–, which in fact constitute a unique, well-defined, and identifiable new neurologic disease.

Author Contributions: Conceptualization: D.B. and P.L.; methodology, D.B.; software, P.L.; validation, D.B. and P.L.; formal analysis, P.L.; investigation, D.B.; resources, D.B.; data curation, P.L.; writing—original draft preparation, D.B.; writing—review and editing, D.B. and P.L.; visualization, P.L.; supervision, D.B.; project administration, P.L. All authors read and agreed to the published version of the manuscript.

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Conflicts of Interest: The authors declare no conflicts of interests. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

Abbreviations

6-OHMS	6-hydroxymelatonin
BBB	blood–brain barrier
BBF	brain blood flow
CT scan	computerized tomography (CT) scan
DECT	digital enhanced cordless telecommunications
DMN	default mode network
EHS	electrohypersensitivity
EHS/MCS	electrohypersensitivity and multiple chemical sensitivity
EMF	electromagnetic field
ELF	extremely low frequencies
fMRI	functional magnetic resonance imaging
GSSG	oxidized glutathione (GSSG)
Hs-CRP	hypersensitive C reactive protein
ICD	international classification of disease
IEI-EMF	idiopathic environmental intolerance attributed to EMF
IgE	immunoglobulin E
IPCS	International Program on Chemical Safety
MCS	multiple chemical sensitivity
MRI	magnetic resonance imaging
NTT	nitrotyrosine
PI	pulsometric index
RF	radiofrequencies
TBARS	thiobarbituric acid reactive substances

to range from 0.7% to 13.3%, mainly affecting about 3% to 5% of the population in many countries (Table 10), meaning that millions of people may in fact be affected by EHS worldwide.

Table 10. Estimated prevalence of people with self-reported EHS in different worldwide countries. USA—United States of America.

Country	Date	Sample Size	People Contribution Rate (%)	Estimated % of People with EHS	References
Sweden	1997	15,000 (19–80) *	73	1.5	Hillert et al., 2002 [59]
Sweden	2010	3406	40	2.7	Palmquist et al., 2014 [60]
Swiss	2004	2048 (>14) *	55.1	5	Schreier et al., 2006 [61]
Swiss	2008	1122 (30–60) *	37	8.6	Roosli et al., 2010 [62]
Swiss	2009	1122 (30–60) *	37	7.7	Roosli et al., 2010 [62]
Germany	2004	30,047	58.6	10.3	Blettner et al., 2009 [63]
Germany	2004	30,047	58.4	8.7	Kowall et al., 2012 [64]
Germany	2006	30,047	58.4	7.2	Kowall et al., 2012 [64]
USA (California)	1998	2072	58.3	3.2	Levallois et al., 2002 [65]
Finland	2002	6121	40.8	0.7	Koppinen et al., 2009 [66]
Great Britain	Before 2007	3633	18.2	4	Eltiti et al., 2007 [67]
Taiwan	2007	1251	11.5	13.3	Tseng et al., 2011 [68]
Austria	Before 2008	460	88	3.5	Schröttner and Leitgeb, 2008 [69]
Japan	Before 2009	2472	62.3	1.2	Furubayashi et al., 2009 [70]
Holland	2011	5789	39.6	3.5	Baliatsas et al., 2014 [71]
Holland	Before 2013	1009	60	7	Vahn Dongen et al., 2014 [72]

* When precised, age intervals of included patients are indicated in brackets.

Furthermore, although these reported EHS prevalence figures are only estimations, not critically evaluated due to a lack of objective criteria to clearly define EHS, it is possible—as speculated in Figure 7—that the EHS prevalence will continue to grow in the future, in as much as the manufacture of wireless technology and industrial chemicals will continue to develop.

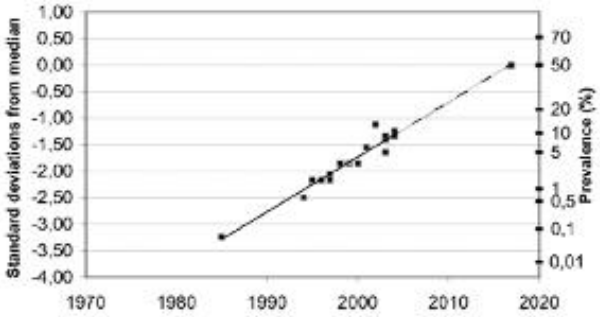

Figure 7. Estimated prevalence (%) of people around the world who consider themselves to be electrohypersensitive, plotted over time in a normal distribution graph, according to Reference [73].

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In summary, we showed that there are presently sufficient clinical, biological, and radiological data for EHS to be acknowledged as a well-defined, objectively identified, and characterized pathological neurologic disorder. As a result, patients who self-report they suffer from EHS should be diagnosed and treated on the basis of presently available biological tests, including the detection of peripheral blood and urine biomarkers and the use of imaging techniques such as fMRI, TDU, and, when possible, UCTS. Moreover, because we showed for the first time that EHS is frequently associated with MCS and that both clinico-biological entities may be associated with a common physiopathological mechanism for genesis, it clearly appears that they can be identified as a unique neurologic pathological syndrome,

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MCS	multiple chemical sensitivity
MRI	magnetic resonance imaging
NTT	nitrotyrosine
PI	pulsometric index
RF	radiofrequencies
TBARS	thiobarbituric acid reactive substances

TDU	transcranial Doppler ultrasound
UCTS	ultrasonographic cerebral tomosphygmography
WHO	World Health Organization
WiFi	Wireless Fidelity

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Exhibit B

Analog Electric Meter - Watthour Meter - Analog Only Electric Utility Meter

Part Number analogmeter ★★★★★ 5 Review(s)

Standard analog electric watthour meter

Write a Review | Questions about this item? Ask here. (See 13 Questions)

Price

Availability: In Stock - Ready to Ship

Your Price: $49.97

158 people like this. Be the first of your friends.

Choose Options

EZ Read (cyclometer) ● Pointer (Dial) Style ○ EZ Read [+$9.00]

Quantity	Price
2 - 3	$44.97
4+	$39.98

Quantity 1 Add to Cart

Add to Gift Registry | Add to Wish List

Description

Standard meter, 120 volt or 240 volt or both. 200 AMP. 60Hz

This meter is a standard meter used in all 50 US States. It is certified for use in California as well. It is also suitable for power systems that are compatible with the US. 60 Hz 120/240 volt with US compatible socket. Our customers use these meters for replacing "smart" or AMR and other types of electronic (digital) electric utility meters. Our customers also use these for new

Grounding Adapters
Cat 6
Cat 7

:Books and Videos

:Professional
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Pro Meters
Pro Meter Accessories
Pro Miscellaneous

construction, sub-metering rental property, installing in-line with the utility company's meter to make sure they are getting charged accurately, and also for boat/RV centers. It can be used for just about anything where you need to measure electrical usage over time for 120 and/or 240 volt.

These meters are remanufactured or factory re-certified meters. Unfortunately, no companies make new analog watthour meters like this - all of the manufacturers have moved over to digital solid-state meters which have some advantages, but also some very serious disadvantages (safety, health, privacy, limited service life, etc). The manufacturer may vary (depending on availability). We carry name brand meters like GE, Westinghouse, Sangamo, and Landis Gyr. We cannot guarantee you will receive any particular brand or model of analog electric meter.

ElectraHealth carries a full line of electromechanical watthour utility meters - for multi-phase, commercial, and meters of all sizes. If you have a special size meter, we can probably get it for you. We supply meters for campgrounds, marinas, and other sub-metering applications. We provide meters for brand new developments, and provide meters to overseas companies. Any kind of electric usage meter you need - just give us a call and we would love to help.

The Return to Analog Utility Meters is a great article posted on our site recommended to everyone aware of the smart meter issue. Visit FreedomTaker.com to download sample legal notices - absolutely recommended to send in before changing out the meter yourself.

Why buy from us? The meters we sell have been calibrated, set to 0, tested and certified and safety/tamper sealed by one of the oldest meter companies left in the country. You can be confident that it will read accurately. Our meters are calibrated to within 1% accuracy - whereas the industry standard is 2% - so we far surpass the industry standard. All meters also come with a 2 year warranty. To date we have still never received a single warranty request for these trusty mechanical meters.

This is an analog electric utility meter. They are also called "electromechanical" meters. These are the kind of meters that have been used on houses for decades. They are simple, safe, and reliable. There are no electronics in this meter - it is strictly analog only. There is no switching or switch-mode power supply (SMPS) and there is nothing that records or transmits how you use your electricity in the privacy of your home. There is no radio that generates radiation all day long.

This is how an electric meter should be. Safe, effective, and simply there to record how much electricity you use.

We have had many customers use this meters to replace their "Smart Meter" electronic and transmitting style meter. No customers have gotten arrested, none have been sued. We've never even heard of these things happening. (The only arrest was the Naperville arrest, and there was no analog meter involved in that - they were simply arrested for saying they didn't want the smart meter). We have heard of people getting their power disconnected after they switch the meter. But most people have not had that experience.

Particularly, if a group of people swap out their meters at the same time they are safer and have less risk of getting their power shut off. Bullies like the power companies like to single out people - they don't like to fight against groups - even small groups.

We do NOT offer support on this product. We can't recommend that you swap your own meter out, as there can be serious risk of injury or death when working on voltage. But many people do this - it's not difficult. Many people hire handymen or electricians (pay them cash and promise them you won't reveal their identity) to do it for them.

The electric company swaps meters out without even shutting the power down or turning off devices in your home. You can do it safer by first shutting off your computers, then turning off ALL circuit breaker switches AND turning off the main (large) circuit breaker.

Exhibit C

Kline, Jack

From: Ryan, Devin <DRyan@PostSchell.com>
Sent: Friday, October 9, 2020 10:22 AM
To: Kline, Jack; Wagner, Nathan R; crenner@w-r.com
Subject: RE: C-2017-2621072 Order

Mr. Kline,

PPL confirmed this morning that the Company will not install the new AMI meter while your appeal is pending.

If you have any questions, please let me know.

Thank you.

Devin Ryan
Principal
Post & Schell, P.C.
17 North Second Street
12th Floor
Harrisburg, PA 17101

717-612-6052 (Phone)
717-731-1981 (Fax)
DRyan@PostSchell.com
www.postschell.com

From: Kline, Jack <Jack.Kline@ecolab.com>
Sent: Friday, October 9, 2020 8:42 AM
To: Ryan, Devin <DRyan@PostSchell.com>; Wagner, Nathan R <nawagner@pa.gov>; crenner@w-r.com
Subject: RE: C-2017-2621072 Order

Good morning Mr. Ryan,

Due to my time constraints to get things filed, would you be able to tell me an estimated time as to when I can expect a answer from the company?

Thank you,

John Kline

From: Ryan, Devin <DRyan@PostSchell.com>
Sent: Thursday, October 8, 2020 6:56 PM

To: Kline, Jack <Jack.Kline@ecolab.com>; Wagner, Nathan R <nawagner@pa.gov>; crenner@w-r.com
Subject: RE: C-2017-2621072 Order

Good evening, Mr. Kline,

I am checking with the Company about your request and will get back to you as soon as I can.

Thank you.

Devin Ryan
Principal
Post & Schell, P.C.
17 North Second Street
12th Floor
Harrisburg, PA 17101

717-612-6052 (Phone)
717-731-1981 (Fax)
DRyan@PostSchell.com
www.postschell.com

From: Kline, Jack <Jack.Kline@ecolab.com>
Sent: Thursday, October 8, 2020 6:51 PM
To: Wagner, Nathan R <nawagner@pa.gov>; crenner@w-r.com; Ryan, Devin <DRyan@PostSchell.com>
Subject: RE: C-2017-2621072 Order

Good evening Mr. Ryan,

In light of the order posted today for docket C-2017-2621072, I wanted to make you aware of my intent to appeal. I am undecided if I am going to file a petition for reconsideration with the PUC or an appeal to the Commonwealth Court, in either case they will be filed in accordance with the time frame allowed.

With that, I respectfully ask that PPL refrain from installing the smart meter until the appeal/reconsideration process is completed. I ask that you respect my time constraints and reply back right away.

Although there will be several reasons for the appeal/reconsideration I will base it in part on the ruling made today by the Commonwealth court in case numbers - No. 492 C.D. 2019, No. 606 C.D. 2019 and No. 607 C.D. 2019. The court concluded in part that:

2. The PUC's conclusion that it lacks authority to accommodate Consumers' desire to avoid radiofrequency (RF) emissions from smart meters is REVERSED. This matter is REMANDED to the PUC for consideration of Consumers' requests for accommodations and determinations of what, if any, accommodations are appropriate for each individual Consumer.

I will also be e-filing my intent to appeal to the PUC.

Thank you for your consideration.

John Kline

From: Wagner, Nathan R <nawagner@pa.gov>
Sent: Thursday, October 8, 2020 11:34 AM
To: crenner@w-r.com; Kline, Jack <Jack.Kline@ecolab.com>
Subject: C-2017-2621072 Order

Attached is the Order for docket number C-2017-2621072

DO NOT REPLY TO THIS EMAIL REPLIES CANNOT BE ACCEPTED AS FILINGS

Nathan Wagner

PA PUC

Legal Assistant

Order Entry Secretarys Bureau

CERTIFICATE OF SERVICE

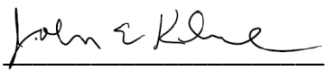
I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a Participant).

VIA E-MAIL

Devin Ryan
Council for PP&L Electric Utilities Corporation
17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
dryan@postschell.com

Curtis S. Renner
Watson & Renner
1101 14th Street, NW
Suite 350 - ENS
Washington, DC 20005
crenner@w-r. com

Date: October 23, 2020



John Kline