Case No. 20-1417

IN THE UNITED STATES COURT OF APPEALS
FOR THE EIGHTH CIRCUIT

THOMAS HARDER,
Appellant,

vs.

UNION PACIFIC RAILROAD COMPANY,
Appellee.

Appeal from the U.S. District Court for the District of Nebraska
Honorable Cheryl R. Zwart, U.S. Magistrate Judge
Case No. 8:18-cv-00058-CRZ

REPLY BRIEF

Jonathan Sternberg, Mo. #59533
Jonathan Sternberg, Attorney, P.C.
2323 Grand Boulevard #1100
Kansas City, Missouri 64108
Telephone: (816) 292-7020
Facsimile: (816) 292-7050
jonathan@sternberg-law.com

Shawn M. Sassaman
Bern Cappelli, LLP
101 West Elm Street, Suite 215
Conshohocken, PA 19428
Telephone: (610) 941-4444
Facsimile: (610) 941-9880
ssassaman@bernllp.com

COUNSEL FOR APPELLANT

Table of Contents

Table of Authorities

Cases

United States Code

Federal Rules of Evidence

Federal Rules of Appellate Procedure

Reply Argument

A. Summary of Mr. Harder's opening brief

Thomas Harder brought a claim under the FELA, 45 U.S.C. § 51, *et seq.*, against the Union Pacific Railroad ("UP") alleging that his exposure to carcinogenic toxins during his work for UP decades ago injured him by causing or contributing to cause a lymphoma. In his opening brief, he explained that the district court, who was a magistrate judge, had erred in concluding the testimony of his medical causation expert, Dr. Ernest Chiodo, was inadmissible under *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993), and for that reason granting UP summary judgment (Brief of the Appellant ["Aplt.Br."] 19-50).

This is because to satisfy *Daubert*'s standard for expert testimony as to causation of an injury under the FELA, the expert's opinion only needs to meet the FELA's relaxed standard of causation: that the railroad's action likely played a part, no matter how small, in bringing about the plaintiff's injury, with no requirement that any fault be apportioned (Aplt.Br. 22-37). One way an expert can do that is by performing a differential etiology analysis ruling in causes and ruling out some, though especially in a FELA case given the relaxed causation standard he need not necessarily rule out every other cause (Aplt.Br. 37-39). And in a toxic exposure case, it is unnecessary to know the precise amount of a toxin to which a plaintiff was exposed as long as the

expert can conclude it was substantial enough to be a likely cause of the injury (Aplt.Br. 40-41).

Here, Dr. Chiodo satisfied all these standards and the magistrate judge erred in concluding otherwise (Aplt.Br. 41-50). He performed a standard, accepted differential etiology analysis (Aplt.Br. 42-43). He properly ruled in Mr. Harder's toxic exposure to diesel exhaust and its constituent components during his railroad work as a likely cause of his lymphoma, from Mr. Harder's detailed explanation of the exposure, common knowledge among experts in industrial hygiene such as himself, and relevant scientific studies (Aplt.Br. 43-45). And while he could not definitely rule out Mr. Harder's age or simple "bad luck" as possible causes of the lymphoma, the law did not require him to rule out every other possible cause, and he testified that regardless, the substantial toxic exposure remained a likely cause (Aplt.Br. 46-48).

Moreover, any concerns from Dr. Chiodo's lack of information or the inability to rule out other causes go to the weight of his testimony, not its admissibility (Aplt.Br. 48-50). He reliably was able to testify that Mr. Harder's substantial toxic exposure likely played some part, no matter how small, in bringing about the lymphoma (Aplt.Br. 48-50).

Therefore, the magistrate judge erred in granting UP summary judgment. This Court should reverse that judgment and remand this case for further proceedings.

B. The law of this circuit and nationwide is that precise exposure levels are unnecessary to prove causation in a toxic exposure injury case so long as if an expert can reliably testify that the plaintiff's exposure was substantial enough to cause his injury, and whether the expert is correct is a question of fact for a jury.

In response, UP argues that because Mr. Harder could not show the precise amount of diesel exhaust and other carcinogens to which he was exposed during his employment and how that amount of exposure was above a precise threshold level sufficient to cause his lymphoma, Dr. Chiodo could not properly rule in that exposure as a likely cause (Brief of the Appellee ["Aple.Br."] 27-33). It argues that this Court's decision in *Wright v. Willamette Indus.*, 91 F.3d 1105 (8th Cir. 1996), commands that in every case, an "expert must establish the threshold dose/response for [the] disease" at issue and that the plaintiff's exposure was above that, and therefore renders Dr. Chiodo's expert testimony on causation inadmissible under the *Daubert* standard (Aple.Br. 27).

This is without merit. It is well-established both in this circuit and nationwide that precise exposure levels are unnecessary to prove causation in a toxic exposure injury case, especially one brought under the FELA, if an expert reliably can testify that the exposure was substantial enough to cause the injury such that a jury reasonably can infer so from the evidence. Whether the expert is correct then is a question of fact for a jury, not a question of law for a court.

1. Subsequent district court decisions in this circuit uniformly reject UP's position.

At the outset, since the magistrate judge issued her decision below in this case (and also since she issued her other decision in its pending companion appeal, *West v. Union Pac. R.R. Co.*, No. 20-1422), district judges in the District of Nebraska uniformly have disagreed with her analysis in the other FELA cases that proceeded along with this one.[1]

Instead, the district judges held that showing exact levels of the plaintiff's or decedent's exposure to carcinogens from their railroad work was not required. Rather, especially in an FELA case, this properly is the subject of expert testimony – including three cases concerning Dr. Chiodo – concluding from education, experience, and a review of testimony, medical records, and scientific literature that the employee was substantially exposed to carcinogens in his railroad work, there is no safe level of those carcinogens, and the substantial exposure likely was a cause of the employee's injury. *See Lemberger v. Union*

---

[1] These decisions also were entered before UP filed its brief, but UP only mentions two in a footnote and fails to disclose that *all* of them denied UP's motions to exclude experts and for summary judgment (Aple.Br. 49, n. 11). Instead, UP states that "[t]he district court has excluded Dr. Chiodo in some cases but not others" (Aple.Br. 49, n. 11). That is untrue. Only in *West*, which also is pending on appeal, did the magistrate judge hold that Dr. Chiodo's testimony was inadmissible. In the other cases, the district judges uniformly held that Dr. Chiodo's and other experts' similar testimony was wholly admissible under *Daubert* to prove causation, and that knowing precise amounts of threshold levels or exposure levels was unnecessary.

Pac. R.R. Co., No. 8:18CV64, 2020 WL 2793565 at *8-11 (D. Neb. May 29, 2020); *Langrell v. Union Pac. R.R. Co.*, No. 8:18CV57, 2020 WL 3037271 at *8-10 (D. Neb. June 5, 2020); *King v. Union Pac. R.R. Co.*, 8:18CV79, 2020 WL 3036073 at *7-9 (D. Neb. June 5, 2020) (holding similar testimony of Dr. Chiodo to that in this case satisfied the *Daubert* standard and was admissible); *Ranney v. Union Pac. R.R. Co.*, 8:18CV59, 2020 WL 3036200 at *7-10 (D. Neb. June 5, 2020) (same); *Bettisworth v. BNSF Ry. Co.*, 8:17-CV-491, 2020 WL 3498139 at *4-10 (D. Neb. June 29, 2020) (same).

As those district judges explain, "When the *application* of a scientific methodology is challenged as unreliable under *Daubert* and the methodology itself is sufficiently reliable, outright exclusion of the evidence is warranted only if the methodology 'was so altered by a deficient application as to skew the methodology itself,'" and "deficiencies in application go to the weight of the evidence, not its admissibility." *King*, 2020 WL 3036073 at *5 (quoting *United States v. Gipson*, 383 F.3d 689, 697 (8th Cir. 2004)) (emphasis in the original) (citation omitted); *see also Ranney*, 2020 WL 3036200 at *5 (same); *Bettisworth*, 2020 WL 3498139 at *3 (same).

What UP is challenging is the application of Dr. Chiodo's methodology – that his differential etiology analysis was incorrect, not the methodology itself. *King*, 2020 WL 3036073 at *7-8; *Ranney*, 2020 WL 3036200 at *7-8; *Bettisworth*, 2020 WL 3498139 at *9. "In the

Eighth Circuit, differential diagnoses in general pass muster under the four considerations identified in *Daubert*," are "presumptively admissible," and "experts are not required to rule out all possible causes when performing the differential etiology analysis." *King*, 2020 WL 3036073 at *7 (quoting *Johnson v. Mead Johnson & Co., LLC*, 754 F.3d 557, 563-64 (8th Cir. 2014)); *see also Ranney*, 2020 WL 3036200 at *7 (same); *Bettisworth*, 2020 WL 3498139 at *8.

And as to UP's argument that Dr. Chiodo had to know the exact levels of a toxin to which the plaintiff was exposed, "this case is a toxic tort case under the FELA," not one generally, and so "the plaintiff need not demonstrate the railroad's conduct was the proximate cause, but only that it played a part – no matter how small – in the injury." *King*, 2020 WL 3036073 at *8; *Ranney*, 2020 WL 3036200 at *8. Rather, "[i]n the context of the FELA" and its relaxed causation standard, "a plaintiff need not necessarily prove the levels of a toxin to which he or she was exposed." *King*, 2020 WL 3036073 at *8; *Ranney*, 2020 WL 3036200 at *8. Indeed, the point to differential etiology is that it is "utilized when the particular facts of the case do not lend themselves to quantitative analysis." *King*, 2020 WL 3036073 at *6; *Ranney*, 2020 WL 3036200 at *6. "'An expert may base an opinion on facts in the case that the expert has been made aware of or personally observed.' Fed. R. Evid. 703. Dr. Chiodo was not required to identify a mathematically precise dosage of [the plaintiff]'s exposure to diesel exhaust, but only evidence which a

reasonable person could use to conclude that [the plaintiff]'s exposure to diesel exhaust during the course of her employment with [UP] was, more likely than not, a cause, no matter how slight, of her" cancer. *Bettisworth*, 2020 WL 3498139 at *9.

Therefore, especially in an FELA case, there is no threshold requirement that a plaintiff prove "dose/response." *King*, 2020 WL 3036073 at *7 (citing *Hardyman v. Norfolk & W. Ry. Co.*, 243 F.3d 255, 261 (6th Cir. 2001); *Harbin v. Burlington N. R.R. Co.*, 921 F.2d 129, 132 (7th Cir. 1990); *Higgins v. Consol. Rail Corp.*, No. 1:06-CV-689 GLS/DRH, 2008 WL 5054224, at *4 (N.D.N.Y. Nov. 21, 2008); *Sunnycalb v. CSX Transp., Inc.*, 926 F. Supp. 2d 988, 995-96 (S.D. Ohio 2013); *Payne v. CSX Transp., Inc.*, 467 S.W.3d 413, 457 (Tenn. 2015); *Russell v. Ill. Cent. R.R.*, No. W2013-02453-COA-R3-CV, 2015 WL 4039982, *2-5 (Tenn. Ct. App. 2015)); *see also Ranney*, 2020 WL 3036200 at *8 (same).

So, in these other cases, just as here Dr. Chiodo's "testimony [wa]s sufficient with respect to specific and general causation" because:

> Dr. Chiodo testified that he relied on the plaintiff's descriptions of his employment in the context of peer-reviewed studies of exposure involving railroad workers and similar occupations. He based his testimony on an interview with the plaintiff, who described his work and his exposures, review of certain pleadings, review of the plaintiff's medical records, and on his own extensive knowledge, experience, and expertise in the field of industrial hygiene. He testified

> that there was no safe threshold of exposure to the carcinogens.
>
> He performed a differential diagnosis or etiology based on the plaintiff's statements, corroborated by a review of the scientific literature. The differential diagnosis is a tested methodology that has been subjected to peer review/publication, has been shown not to frequently lead to incorrect results, and is accepted in the medical community. His finding that [the plaintiff] had a "long and intense" exposure to agents known to cause [cancer] including diesel exhaust … during sixteen years of railroad employment has an adequate factual basis. He properly extrapolated his opinion from the facts and scientific literature.
>
> He testified to a reasonable degree of medical certainty that [the plaintiff]'s exposure to benzene in diesel exhaust … during the sixteen years the plaintiff worked for the Railroad contributed to his [cancer]. Notably, Dr. Chiodo, who is also an attorney, testified that in an FELA case, he is not required to determine which of several potential causes was most likely to cause the plaintiff's multiple myeloma, characterizing that determination as a matter for resolution by a judge or jury. …
>
> [Dr. Chiodo's] opinions are tied to the facts of the case and are supported by accepted scientific theories. The record shows the experts based their opinions on medical records, peer-reviewed studies, and evidence of exposures that covered a long period of time. They also relied on their education and experience in the fields of statistics, toxicology, and industrial hygiene. [UP]'s criticisms go to the weight, rather than the admissibility of the testimony.

Id. at *8; *see also Ranney*, 2020 WL 3036200 at *8-9 (re: lymphoma caused by diesel exhaust and its constituent components); *see also Bettisworth*, 2020 WL 3498139 at *6-9 (same re: lung cancer).

2. The law of this circuit is that that precise exposure levels are unnecessary to prove causation in a toxic exposure injury case.

UP is equally incorrect that this Court previously has disagreed with these principles and somehow held that in every toxic exposure case, to satisfy *Daubert* an "expert must establish the threshold dose/response for [the] disease" at issue and show that the precise dose the plaintiff received is higher than that (Aple.Br. 27). Its reliance on this Court's 1996 decision in *Wright v. Willamette Indus.* is misplaced, especially considering later decisions. *Wright* is inapposite, did not hold what UP suggests, and later decisions specifically have held that an expert *need not* establish precise levels of exposure to satisfy *Daubert*, allowing expert testimony on causation who did not establish that.

Wright was not an FELA case. In *Wright*, a group of Arkansas plaintiffs who claimed to have been injured by exposure to wood fibers containing formaldehyde that were emitted from a nearby factory and sued the factory owner for negligence under Arkansas law. 91 F.3d at 1106. The plaintiffs had evidence that formaldehyde could cause symptoms of the type they had and proved they had been exposed to some amount of formaldehyde from the factory because it was in their sputum and urine. *Id.* at 1107.

The problem, though, was that while the plaintiffs' experts admitted it took some amount of formaldehyde to produce harm to human beings, he only testified "about the levels of gaseous

formaldehyde that might be expected to cause symptoms like the ones that plaintiffs claim to have experienced," not "the levels of exposure to wood fibers impregnated with formaldehyde that are likely to produce adverse consequences." *Id.* at 1107-08. There was no mention of any differential etiology or other scientific methodology as to wood fibers impregnated with formaldehyde at all. *Id.*

So, when one expert, "after a great deal of prodding, testified that the [plaintiffs]' complaints were more probably than not related to exposure to formaldehyde," "that opinion was not based on any knowledge about what amounts of wood fibers impregnated with formaldehyde involve an appreciable risk of harm to human beings," and so his "testimony regarding the probable cause of the [plaintiffs]' claimed injuries was simply speculation." *Id.* at 1108. Because the plaintiffs "had the burden of proving proximate cause," that testimony was insufficient to meet that burden. *Id.*

Nowhere in *Wright* did the Court hold, as UP suggests, let alone under the FELA, that the "expert must establish the threshold dose/response for [the] disease" at issue and then show that the precise dose the plaintiff received is higher than that (Aple.Br. 27). Instead, the Court merely held that, in a negligence case, "there must be evidence from which the factfinder can conclude that the plaintiff was exposed to levels of that agent that are known to cause the kind of harm that the plaintiff claims to have suffered." 91 F.3d at 1107. That is not

the same as requiring proof of a specific threshold dose/response and the plaintiff's precise exposure.

Subsequent decisions from this Court bear this out. In their brief, UP briefly mentions two decisions, *Bonner v. ISP Techs.*, 259 F.3d 924 (8th Cir. 2001), and *Mattis v. Carlon Elec. Prods.*, 295 F.3d 856 (8th Cir. 2002), and suggests that they also echo a requirement of proving precise threshold dose/response and exposure levels (Aple.Br. 46). This is untrue. Instead, both show that even in negligence cases, where unlike in an FELA case a plaintiff must prove proximate cause, it is possible for a plaintiff to meet his burden by an expert testifying that a substantial exposure is sufficient to cause the plaintiff's injury, and the plaintiff's exposure was substantial enough, without knowing either precise amount.

In *Bonner*, a worker sued her employer for psychological and neurological injuries caused by her exposure to an organic solvent that contained 57% gamma-butyrolactone (BLO) and three other chemical compounds. 259 F.3d at 927. She testified that her "work station was poorly ventilated at the time of the first exposure, and her protective gear was limited to gloves and goggles." *Id.*

The worker's expert testified that her exposure to the BLO and other compounds caused likely caused her injuries. *Id.* at 930. He based this on her reported temporal connection between her reported exposure and her symptoms, animal studies of BLO's effects, studies of

similar chemicals, and the plaintiff's medical records. *Id.* But he "never determined the quantity of BLO to which [the worker] was exposed," he "failed to rule out other possible causes of her symptoms," and he did not identify a precise quantity of BLO necessary to cause the symptoms. *Id.* As UP suggests is necessary, he did not "establish the threshold dose/response for [the] disease" at issue and show that the precise dose the worker received was higher than that (Aple.Br. 27).

This Court held that the expert's testimony was proper under *Daubert* and, contrary to UP's argument here, "it was not necessary that [the worker]'s experts quantify the amount of [the solvent] to which she was exposed in order to demonstrate that she was exposed to a toxic level of BLO." *Bonner*, 259 F.3d at 931. Instead, the worker could prove through witness testimony that her exposure "was of a duration and of a volume sufficient to support a conclusion that she inhaled and/or absorbed through her skin" a level that her expert said "exceeded safe levels." *Id.* The employer's concerns, as the UP's here, went to the weight of the expert's testimony, not his credibility, and there was "nothing in the record to suggest that it was the result of methodology so unreliable as to render" it inadmissible. *Id.*

The Court held the same in *Mattis*. Like *Bonner*, its decision in *Mattis* also shows that, even in a negligence case with a higher standard of causation than the FELA, a precise dose/response of an exposure need not be shown for an expert's testimony to be admissible.

In *Mattis*, an electrician brought a products liability action against the manufacturer of a of polyvinyl chloride (PVC) cement to recover for reactive airways dysfunction syndrome (RADS) he allegedly acquired as result of his exposure to cement vapors. 295 F.3d at 858-59. The electrician testified about the circumstances of his exposure and his illnesses. *Id.* at 859.

The electrician's expert testified the electrician's exposure to the cement vapors caused his RADS. *Id.* at 860. The expert "could not determine [the electrician]'s exact exposure level" but "testified that experts have known for a long time that the organic solvents in Carlon cement are respiratory irritants capable of injuring respiratory mucous membranes in the nostrils, throat, trachea, and lungs," and testified that the amount of exposure the plaintiff reported was sufficient to cause RADS. *Id.* at 860-61.

This Court held the expert's testimony was proper under *Daubert*. *Id.* Contrary to what UP argues here, the Court held that "[t]o prove exposure levels, plaintiffs need not produce a 'mathematically precise table equating levels of exposure with levels of harm.'" *Id.* at 860 (quoting *Bednar v. Bassett Furniture Mfg. Co.*, 147 F.3d 737, 740 (8th Cir. 1998)). "Rather, a plaintiff need only make a threshold showing that he or she was exposed to toxic levels known to cause the type of injuries he or she suffered." *Id.* The electrician in *Mattis* had done so through the expert's analysis of the electrician's own testimony and the

expert's own knowledge, which was "admissible and created a question of fact for the jury about whether [the electrician] was exposed to an unsafe level of fumes, capable of causing respiratory problems." *Id.* at 861.

UP is wrong that this Court in *Wright* or anywhere else held that to satisfy *Daubert* an "expert must establish the threshold dose/response for [the] disease" at issue and show that the precise dose the plaintiff received is higher than that (Aple.Br. 27). Instead, the problem in *Wright* was that the plaintiffs produced no evidence, even expert testimony, that exposure to formaldehyde in wood fibers caused their injuries at all. But when, as in *Bonner* and *Mattis*, the plaintiff's own testimony shows a substantial exposure, and an expert testifies that within his knowledge, corroborated by scientific literature, that exposure was sufficient to cause injury, that is a "threshold showing that he or she was exposed to toxic levels known to cause the type of injuries he or she suffered," which is all that is necessary under *Daubert*. *Mattis*, 295 F.3d at 860.

3. The law nationwide is that that precise exposure levels are unnecessary to prove causation in a toxic exposure injury case, especially one under the FELA.

Dr. Chiodo's testimony was equally sufficient to the expert testimony of which this Court approved in *Bonner* and *Mattis* to establish that Mr. Harder was substantially exposed to a level of diesel

exhaust and its components sufficient and known to cause his lymphoma. Relying on Mr. Harder's own recounting of his substantial exposure, Dr. Chiodo testified that within his own knowledge as an industrial hygienist and physician, this was enough to cause Mr. Harder's lymphoma (Aplt.Br. 4-11, 43-45). This was "admissible and created a question of fact for the jury about whether [Mr. Harder] was exposed to an unsafe level of [diesel exhaust], capable of causing" lymphoma. *Mattis*, 295 F.3d at 860.

This is especially true considering that this case falls under the FELA, not general negligence in which proximate cause must be proven. In his opening brief, Mr. Harder explained that the FELA's lower standard of causation – that the "defendant railroad 'caused or contributed to' a railroad worker's injury 'if [the railroad's] negligence played a part – **no matter how small** – in bringing about the injury," *CSX Transp., Inc. v. McBride*, 564 U.S. 685, 705 (2011) (emphasis added) – informs what is necessary for expert testimony on causation in an FELA case, because that is the standard of sufficiency to which evidence of causation ultimately is held (Aplt.Br. 30-37).

UP argues that Mr. Harder is seeking a "special *Daubert* standard" in FELA cases and cites authorities that FELA does not change the core *Daubert* inquiry as to admissibility (Aple.Br. 18-23). This misunderstands Mr. Harder's argument. As Mr. Harder explained in his opening brief, it is not that the FELA in any way changes the core

Daubert inquiry of whether (1) the subject requires expert testimony, (2) the proposed expert is qualified, and (3) the expert's testimony is trustworthy enough to assist the trier of fact (Aplt.Br. 22-29), but that as in any case, the standard of causation in an FELA case "impacts" the analysis as to that third question (Aplt.Br. 30-37). Whereas in an ordinary negligence case the expert's testimony must be reliable enough to show probable cause, in an FELA case the expert's testimony needs to be reliable enough to demonstrate only some causal connection between a defendant's negligence and the plaintiff's injuries, so as to meet the lower standard of causation (Aplt.Br. 30-37).

So, informed by the relaxed FELA causation standard, courts nationwide have held that especially in an FELA case, a plaintiff's expert testimony *does not* have to "establish the threshold dose/response for [the] disease" at issue and show that the precise dose the worker received was higher than that, as UP argues here (Aple.Br. 27). Instead, the testimony need only be able to prove the FELA's low, "some causal connection" standard.

While this Court has not previously engaged in a *Daubert* analysis in a toxic-exposure FELA case, many other circuits have[2] and, echoing

---

[2] UP relies on one decision from the Fifth Circuit in a Jones Act case arguably requiring precise dose/response showings, *Seaman v. Seacor Marine, L.L.C.*, 326 F. App'x 721 (5th Cir. 2009), which incorporates the lower FELA standard. The Fifth Circuit is a lone outlier in this. *See*

Bonner and *Mattis*, have agreed that no showing of dose/response is necessary. Instead, so long as the plaintiff's causation expert can testify reliably that the toxin at issue is capable of causing the plaintiff's injury, and the plaintiff's exposure was substantial enough for the railroad's action to be a cause of the plaintiff's injury, no matter how small, it satisfies *Daubert*.

In *Granfield v. CSX Transp., Inc.*, the employee alleged that the railroad had required him to operate locomotives with malfunctioning equipment that caused him to suffer lateral epicondylitis, or "tennis elbow." 597 F.3d 474, 475 (1st Cir. 2010). His expert testified that the repeated movement the plaintiff recounted was sufficient to cause the injury, but "admitted he could not quantify the amount of force nor the number of repetitions [the plaintiff] had to carry out …." *Id.* at 485. The First Circuit held the expert's testimony was proper and admissible under *Daubert* in an FELA case, as the expert was sufficiently qualified and testified that the repetition the plaintiff reported was sufficient to cause his injury, which met the FELA's standard of causation and was enough for a jury to find for the plaintiff. *Id.* at 485-87.

In *Hardyman*, the employee alleged he had developed carpal tunnel syndrome from repetitive movements during his employment. 243 F.3d at 257. His expert testified that the repeated movement the

---

also Huffman v. Union Pac. R.R. Co., 675 F.3d 412, 425-26 (5th Cir. 2012).

plaintiff recounted was sufficient to cause the injury, but stated "that one simply could not quantify the level or dose of risk factors causative of CTS in a manner consistent with a dose/response relationship or threshold level." *Id.* at 262. The district court excluded the expert, holding "the only way Plaintiff could establish causation would be with the proffer of a known 'dose/response relationship' or 'threshold phenomenon.'" *Id.* The Sixth Circuit reversed, holding that the expert's testimony was admissible under *Daubert* in an FELA case: he was qualified and he testified that the actions the plaintiff reported were sufficient to cause his injury, which met the FELA's standard of causation and was enough for a jury to find for the plaintiff, and no showing of "dose/response" was necessary. *Id.* at 266-67.

In *Harbin*, the employee alleged he had suffered a heart attack from exposure to soot while cleaning railroad boilers. 921 F.2d at 129-30. The plaintiff's medical expert testified that the substantial soot exposure he plaintiff reported could cause a heart attack, but the district court granted the railroad summary judgment because the plaintiff and his expert could not prove "the precise quantity or composition of soot present in the air." *Id.* at 130. The Seventh Circuit reversed, citing facts strikingly similar to those here and holding it was unnecessary for the expert to show a precise dose/response:

> [The employee] has adduced ample evidence bearing upon the Railroad's negligence to raise a jury question. The facts

> establish that locomotives emitting clouds of exhaust fumes were left running in an area with no special system of ventilation. In this same building, [the employee] was directed to scrape clean boilers using a process that generated additional soot and debris. In fact, so much soot was produced that the mouth guards supplied by the Railroad turned black with exhaled soot and had to be discarded frequently. Impervious to repeated complaints of inadequate ventilation by [the employee] and other employees, however, the Railroad took no action to rectify the problem. Instead of utilizing an air pressure hose to disperse the thick fog of soot particles generated in the boiler cleaning process, the Railroad might have employed a vacuum cleaner. Or perhaps it would have been more prudent for the Railroad to provide its employees with larger face masks to shelter the nose as well as the mouth. Based upon this evidence, a jury could reasonably conclude that the Railroad's failure to employ a different boiler cleaning method or take additional precautions to ensure the safety of its employees was negligent.
>
> Harbin need not identify the specific composition and density of soot present in his work environment to survive a summary judgment motion. **While expert testimony documenting the hazards posed by the presence of so many parts per million of soot in the air would certainly enhance [the employee]'s case, it is not essential under the regime of the statute.**

Id. at 131-32 (emphasis added);

Compare Mr. Harder's testimony at Aplt.Br. 4-7, recounting his inhalation of exhaust in an unventilated building. *See also Payne*, 467 S.W.3d at 457 (holding expert testimony sufficient under the FELA to establish causation between diesel exhaust exposure and lung cancer,

even though experts admitted "it was medically impossible to 'know the precise amount of carcinogens that [the employee] inhaled' or to determine 'that one single factor [was] the causation'" and could not rule out all other potential causes, where they reliably could testify that the reported exposure was substantial enough to cause the plaintiff's injury); *Goebel v. Denver & Rio Grande W. R.R. Co.*, 346 F.3d 987, 999 (10th Cir. 2003) (expert testimony was sufficient under *Daubert* that circumstances in railroad tunnel could have caused employee's acute high-altitude cerebral edema, even though expert could not rule out all alternative explanations).

This makes sense, as otherwise, only when a plaintiff took precise measurements of his exposure while it was ongoing would he be able to recover against the one who injured him. For those like Mr. Harder, who experienced the exposure decades ago – and decades before the injury the exposure caused manifested itself, that would mean they could never record.

Especially under the FELA, a "broad remedial statute," *Atchison, Topeka & Santa Fe Ry. Co. v. Buell*, 480 U.S. 557, 562 (1987), that was "a response to the special needs of railroad workers who are daily exposed to the risks inherent in railroad work and are helpless to provide adequately for their own safety," *Sinkler v. Mo. Pac. R.R. Co.*, 356 U.S. 326, 329 (1958), that would be unjust. Many exposures are suffered without measurement, and as in *Granfield*, *Hardyman*,

Harbin, and *Payne*, it is often only reliable scientific inquiry later that can show that they caused injury – and in an FELA case, merely that the exposure played some part, no matter how small, in bringing about the injury.

Likewise, as in *Bonner* and *Mattis*, numerous decisions nationwide have held it sufficient under *Daubert* for a plaintiff to produce reliable expert testimony that his toxic exposure was substantial enough to cause his injury where the expert is unable to quantify the exact dose/response at issue or rule out all other possible causes, even in negligence cases where proximate cause must be proven. This is from the same concern, as often exposures cannot accurately be measured when they occur, so later scientific inquiry is necessary, often based on the plaintiff's own testimony of the exposure. *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 264 (4th Cir. 1999).

For some of these decisions, *see, e.g.*:

- *Best v. Lowe's Home Cent., Inc.*, 563 F.3d 171, 181 (6th Cir. 2009) (anosmia caused by spilled pool chemical)
- *Wendell v. GlaxoSmithKline LLC*, 858 F.3d 1227, 1237 (9th Cir. 2017) (lymphoma caused by drugs used to treat inflammatory bowel disease);
- *Messick v. Novartis Pharm. Corp.*, 747 F.3d 1193, 1198-99 (9th Cir. 2014) (osteonecrosis of the jaw caused by breast cancer treatment);

- *Clausen v. M/V NEW CARISSA*, 339 F.3d 1049, 1059-60 (9th Cir. 2003) (death of farmed oysters caused by oil spill);
- *In re Hanford Nuclear Reservation Litig.*, 292 F.3d 1124, 1136 (9th Cir. 2002) (illnesses caused by radioactive emissions from nuclear facility);
- *Kennedy v. Collagen Corp.*, 161 F.3d 1226, 1228 (9th Cir. 1998) (atypical lupus caused by collagen injections).

C. Dr. Chiodo reliably concluded that Mr. Harder's substantial exposure to diesel exhaust and its constituent components was a likely cause of his lymphoma.

As with the expert testimony in all these decisions, here Dr. Chiodo's conclusion that Mr. Harder's exposure to diesel exhaust and its carcinogenic components during his railroad work was a likely cause of his lymphoma was equally sufficient and admissible. In his opening brief, Mr. Harder explained that Dr. Chiodo performed a standard differential etiology analysis, ruling in possible causes and ruling some out to come to a likely cause (Aplt.Br. 42-43). He ruled in Mr. Harder's toxic exposure as a likely cause (Aplt.Br. 43-45). He ruled out some other causes (Aplt.Br. 46-48). And any concerns UP may have as to the sufficiency of this go to the application of Dr. Chiodo's methodology, not the methodology itself, and so go to the weight of his testimony, not its admissibility (Aplt.Br. 48-50).

In response, besides incorrectly requiring testimony of a precise dose/response, as addressed above, UP also argues Dr. Chiodo's testimony was inadmissible because his conclusion that diesel exhaust and its components could cause lymphoma was based on his own say so – his *ipse dixit* (Aple.Br. 3-7, 45-51), and he could not rule out age or bad luck as possible causes (Aple.Br. 7-10, 37-44). Both arguments are without merit.

First, Dr. Chiodo testified it was simply part of his knowledge as a physician and industrial hygienist that diesel exhaust and one of its components, benzene, can cause lymphoma and other cancers (Aplt.Appx. 109-10, 410-15). Contrary to UP's argument (Aple.Br. 45-51), there is nothing wrong with this:

> Dr. Chiodo's differential diagnosis does not rest on what he subjectively believes are associations with respect to [lymphoma]. It rests on his education, personal knowledge, experience and qualifications. As a medical professional, Dr. Chiodo personally possesses a fund of medical knowledge, experience, and expertise. A "methodology" would not be necessary to tap his fund of medical knowledge. See, *Kumho Tire* [*Co. v. Carmichael*, 526 U.S. 137, 150 (1999) ("relevant reliability concerns may focus upon personal knowledge or experience")]. For example, what "methodology" would Dr. Chiodo use to link cigarette smoking to lung cancer? Cigarette smoking, radon exposure, and a genetic predisposition are not merely factors observed as being associated with lung cancer. Each is widely known, and well-established, as potential causes of lung cancer.

Bettisworth, 2020 WL 3498139 at *9; *see also King*, 2020 WL 3036073 at *7 (Dr. Chiodo relied on, among other things, "his own extensive knowledge, experience, and expertise in the field of industrial hygiene").

Second, Dr. Chiodo backed up his statements with a review of scientific literature. UP argues the studies he cited do not actually support diesel exhaust and its components causing lymphoma (Aple.Br. 49-50). That is just untrue. Dr. Chiodo cited studies showing an association between lymphoma and occupational exposure to diesel exhaust and solvents like benzene, just as he already knew there was from his training (Aplt.Appx. 172-77). These studies concluded:

- "the following factors independently increased the risk of [lymphoma]: farmer and machinist as long held occupations; constant exposure to diesel exhaust fumes;"
- "Risk of follicular lymphoma significantly increased with three independent metrics of exposure to benzene;"
- "The robust associations observed here with varying benzene assessment methods provide support for a benzene-NHL association;"
- "Workers in both the repair shops and the rail yards may have significant exposure to diesel fumes, diesel fuels, lead, carbon monoxide, and other oxides of nitrogen;" and
- "Diesel exhaust consists of a complex mixture of chemicals which contain known genotoxicants, one of which is benzene."

(Aplt.Appx. 172-77).

UP also suggests Dr. Chiodo could not rely on Mr. Harder's own testimony of his substantial exposure to diesel exhaust (Aple.Br. 33-36). This is without merit.

This Court has held many times that an expert can rely on a plaintiff's own statements of his toxic exposure in determining whether that level of exposure, if believed, would cause the plaintiff's injury. In *Bonner*, the worker's expert could use her own testimony to determine that her exposure "was of a duration and of a volume sufficient to support a conclusion that she inhaled and/or absorbed through her skin" a level that her expert said "exceeded safe levels." 259 F.3d at 931. In *Mattis*, the electrician's expert could use his recounting of the circumstances of his exposure to determine the amount he suffered was sufficient to cause his RADS. 295 F.3d at 860-61. And in *Tedder v. Am. Railcar Indus., Inc.*, the injured worker's expert properly relied on the worker's own description of his work-related accident and the temporal connection between that accident an the symptoms of his injury to come to his conclusion that the accident caused the injury. 739 F.3d 1104, 1109 (8th Cir. 2014).

Here, Mr. Harder testified about the substantial diesel exhaust exposure he experienced over a period of years (Aplt.Br. 4-7). It is strikingly similar to the testimony that the Seventh Circuit found to be a sufficient predicate for expert testimony in *Harbin*, 921 F.2d at 129-

30. It was proper for Dr. Chiodo to rely on that testimony in determining that the amount of exposure Mr. Harder experienced was substantial enough to cause his lymphoma.

Finally, UP complains that Dr. Chiodo could not definitively rule out Mr. Harder's age or bad luck (Aple.Br. 7-10, 37-44). But as Mr. Harder explained in his opening brief, an expert's inability to definitively rule out all other causes does not render his testimony inadmissible, and this merely goes to the weight of the testimony, not its admissibility (Aplt.Br. 46-48). Indeed, this Court directly has held so many times. *See Lauzon v. Senco Prods., Inc.*, 270 F.3d 681, 693-95 (8th Cir. 2001) ("an expert's causation conclusion should not be excluded because he or she has failed to rule out every possible alternative cause"); *Johnson*, 754 F.3d at 561 ("experts are not required to rule out all possible causes").

Dr. Chiodo was not required to identify a precise dose/response for Mr. Harder's exposure to diesel exhaust sufficient to cause lymphoma and show that he suffered a precise amount of exposure above that threshold. All he had to be able to testify was that Mr. Harder suffered a substantial exposure that was enough to be a likely cause of the lymphoma. Dr. Chiodo did so. He based his opinion on medical records, peer-reviewed studies, and evidence of Mr. Harder's exposures that covered a long period of time. He also relied on his education and experience in the fields of toxicology and industrial hygiene. UP's

criticisms go to the weight of his testimony, rather than its admissibility.

Just as it was for the plaintiffs in *King*, *Ranney*, and *Bettisworth*, Dr. Chiodo's testimony is admissible to prove causation in this FELA case. The magistrate judge below erred in holding otherwise.

Conclusion

This Court should reverse the district court's orders excluding Dr. Chiodo's testimony and granting summary judgment to UP and should remand this case for further proceedings.

Respectfully submitted,

Jonathan Sternberg, Attorney, P.C.

by /s/Jonathan Sternberg

Jonathan Sternberg, Mo. #59533
2323 Grand Boulevard #1100
Kansas City, Missouri 64108
Telephone: (816) 292-7020
Facsimile: (816) 292-7050
jonathan@sternberg-law.com

BERN CAPPELLI, LLP

BY: /s/Shawn M. Sassaman

Shawn M. Sassaman
101 West Elm Street, Suite 215
Conshohocken, Pennsylvania 19428
(610) 941-4444
(610) 941-9880 fax
ssassaman@bernllp.com

COUNSEL FOR APPELLANT
THOMAS HARDER

Certificate of Compliance with Type-Volume Limitation, Typeface Requirements, and Typestyle Requirements

I certify that this brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B), because this brief contains 6,475 words excluding the parts of the brief exempted by Rule 32(f).

I further certify that this brief complies with the typeface requirements of Rule 32(a)(5) and typestyle requirements of Rule 32(a)(6), because this brief has been prepared in a proportionally spaced typeface, Century Schoolbook size-14 font, using Microsoft Word for Office 365.

I further certify that the electronic copy of this brief filed via the Court's ECF system is an exact, searchable PDF copies of the original, that it was scanned for viruses using Microsoft Windows Defender, and that according to that program it is free of viruses.

/s/Jonathan Sternberg
Attorney

Certificate of Service

I certify that on September 16, 2020, I electronically submitted the foregoing to the Clerk of the Court for the United States Court of Appeals for the Eighth Circuit for review by using the CM/ECF system.

/s/Jonathan Sternberg
Attorney