

That Which We Call
“Any Exposure” by Any
Other Name Would
Smell as Rotten

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Successful challenges to the “any exposure” opinion have resulted plaintiffs’ efforts to makeover and recharacterize the opinion to preserve it in light of exclusions.

The Transmogrification of the “Any Exposure” Opinion

The fundamental tenet of toxicology is that it is the dose that makes the poison. In the last two decades, jurisdictions have ignored and overlooked this principle in cases alleging injury from work with asbestos-containing

products. Perhaps a better way of describing it might be that it has been swallowed by “the elephantine mass of asbestos cases” that emerged in the 1990s and continues to grow today. See *Ortiz v. Fibreboard Corp.*, 527 U.S. 815, 821 (1999). After the decades of litigation and bankruptcies of major amphibole defendants, asbestos cases filed today involve increasingly tenuous allegations of only minimal or remote potential exposure to “asbestos” from products that may or may not have contained “asbestos.” “Asbestos” is a generic and commercial term used for a group of naturally occurring mineral silicate fibers of the serpentine and amphibole series. It was considered a “magic mineral” and was used in thou-

sands of different kinds of products due to its incredible beneficial properties and wide variety of valuable uses. “Asbestos” is a naturally occurring mineral with deposits throughout the United States and the world and fibers are ubiquitous and found in the ambient air as a result of erosion and historical use in products.

Today’s claims often involve allegations of exposure to respirable “asbestos” fibers, often chrysotile asbestos, at very low doses. Frequently, the dose is below any established by science and medicine to cause disease. Often, that dose is in the range that a person receives from breathing background levels of asbestos in the ambient air over the course of a lifetime, which experts almost universally agree does not

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cause mesothelioma. Despite this, many courts have allowed plaintiffs' experts to rely on these opinions to establish general and specific causation. Proponents of the "any exposure" opinion generally testify that each and every exposure (or exposure above a background level) to asbestos during a person's lifetime is a substantial contributing factor in causing any subse-

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quent disease. Accepting the "any exposure" opinion unfairly shifts the burden of proof on causation to defendants, when plaintiffs have not even met the scientific or legal requirements for general or specific causation, which substantially prejudices defendants and invites in the most tenuous of claims.

Given the vast implications of this opinion for perpetuating asbestos litigation, this article examines the history of the "any exposure" opinion in asbestos litigation, discusses some successful challenges, and examines plaintiffs' responses to the challenges in efforts to makeover and recharacterize the opinion to preserve it in light of the challenges and exclusions.

The "Any Exposure" Opinion Rises to Prominence in Asbestos Litigation

In 2002, a federal court in the Eastern District of New York prognosticated that asbestos litigation is "a festering wound on our society that is going to continue for some time." *In re Joint E. & S. Districts Asbestos Litig.*, 237 F. Supp. 2d 297, 300 (E.D.N.Y. 2002). Different forecasts predicted that incidence of mesothelioma would peak in 1992, 1997, or 2002. *See, e.g.,*

Stephen J. Carroll *et al.*, *Asbestos Litigation* 135 app. A (6th ed. 2005). However, it was not until 2017 that data for the first time "show[ed] a downward trend in both the total number of asbestos lawsuit filings, as well as a decrease in filings for every major disease type."

Therefore, as predicted, cases continue to be filed in great volume and even in numbers that outpaced forecasts based on incidence and historical facts regarding usage and exposure. Plaintiffs' ability to convince courts to embrace an "open door" policy regarding experts' causation opinions, rather than acting as gatekeepers by focusing on the scientific reliability of the opinions, have perpetuated these numbers. The result? In many jurisdictions, virtually all claims are permitted to proceed past dispositive motions, no matter how attenuated the claimed exposure or how low the alleged dose.

One of the biggest outcomes of this trend is that courts allow plaintiffs' experts to offer some derivation of the "every exposure" opinion. This opinion began as an "every breath," or "each and every fiber," opinion, relying on the "single fiber theory," which opined that any single fiber that a plaintiff inhaled could have been the one that caused the cellular change leading to the plaintiff's disease. Therefore, they argued, "each and every fiber," and even "each and every breath," must be considered causative. However, courts began excluding this opinion when they began recognizing its shortcomings. In response, the "each and every fiber" opinion evolved to "each and every exposure," to "any exposure," and sometimes to "any exposure above background" or "cumulative exposure." Proponents attempt to buttress this opinion by arguing that (1) any exposure increases someone's risk, (2) there is no "safe level" of exposure, and (3) no threshold for exposure has ever been established.

Though different plaintiffs' experts offer slightly different variants of the "every exposure" opinion and may use different terminology, the opinion generally includes the following arguments:

1. "Asbestos" is a proven carcinogen.
2. "Asbestos" is an accepted cause of a variety of cancers, including mesothelioma.
3. Exposures to asbestos are cumulative and dose-response is assumed

to have a linear no-threshold dose response curve.

4. Because asbestos fibers remain in the body, each and every exposure mathematically increases someone's theoretical risk of developing a disease, and the question, therefore, is not which exposures substantially contribute to the mesothelioma risk, but rather, whether any such exposure can properly be excluded as proved *not* to contribute.
5. Someone cannot determine or rule out which fibers, or exposures, caused the cellular change that later became cancer.
6. There is neither a known "safe" level of exposure to asbestos nor a proven threshold.
7. There are cases of mesothelioma in which the only known exposure was of a very short duration.
8. Each alleged exposure that someone has to asbestos must be considered a substantial contributing factor in the development of any subsequent disease.
9. While different fiber potencies, as well as different concentrations, durations, and frequencies (doses) might contribute to risk and to cause differently, each occupational or paraoccupational exposures, no matter how small, is a substantial contributing factors.
10. This opinion is not new or novel, and has been the same or a similar opinion for many years, now.

But there is good reason to believe that the tide has turned back against allowing these "every exposure" or "any exposure" opinions that are not based on dose or science. *See, e.g.,* Mark A. Behrens & Phil Goldberg, *The Asbestos Litigation Crisis: The Tide Appears to Be Turning*, 12 Conn. Ins. L.J. 477 (2006); William L. Anderson *et al.*, *The "Any Exposure" Theory Round II—Court Review of Minimal Exposure Expert Testimony in Asbestos and Toxic Tort Litigation Since 2008*, 22 Kan. J.L. & Pub. Pol'y, 5–10 (2012); William L. Anderson, *et al.*, *The Any Exposure Theory Round III: An Update on the State of the Case Law 2012-2016*, Def. Counsel J. (2016). What began as a ray of hope to exclude the "each and every fiber" opinion, and its derivations, grew into a tidal wave of state and federal courts around the country precluding these opinions. Examining the rationale behind the growing groundswell of decisions exclud-

ing these opinions reveals that the opinions tend to be litigation-driven, they are not scientifically based or reliable, and they ignore a fundamental tenet of toxicology.

It Is the Dose That Makes Any Substance a Poison

A fundamental tenet of toxicology is that “the ‘dose makes the poison’ and that all chemical agents, including water, are harmful if consumed in large quantities.” *Mancuso v. Consol. Edison Co. of New York*, 967 F. Supp. 1437, 1445 (S.D.N.Y. 1997) (citing Federal Judicial Center: Reference Manual on Scientific Evidence, “Reference Guide on Toxicology,” at 185 (1994)). Thus, because all substances can be toxic, “[d]ose is the single most important factor to consider in evaluating whether an alleged exposure caused a specific adverse effect.” David Eaton, *Scientific Judgment and Toxic Torts: A Primer in Toxicology for Judges and Lawyers*, 12 J.L. & Pol’y 1, 11, 15 (2003).

In a toxic tort case, causation experts should be required to provide scientifically reliable opinions regarding three things: (1) the dose that is sufficient to cause the disease at issue; (2) the individual plaintiff’s specific dose; and (3) other possible causes can be excluded. Experts can prove these aspects by relying on epidemiological studies of the particular agent at issue. Further, an expert could meet this burden by analyzing the dose quantitatively or qualitatively (assessing the level, concentration, and duration of the exposure). What is insufficient is an expert failing to rely on a scientifically reliable method and instead, merely reciting the words “any exposure is a substantial contributing factor.”

The “Each and Every Fiber” Opinion Obviates the Need to Prove Substantial Factor for Low-Dose Chrysotile Products and Defendants

When the “big dusty” amphibole defendants began to disappear, the landscape of the litigation changed, and the plaintiffs quickly adapted. They developed and relied on the “every fiber” opinion to prove cases against low-dose chrysotile defendants, suggesting that each and every one of the defendants’ products were a substantial disease-causing factor, irrespective of the dose to which the plaintiff was exposed, the plaintiff’s other exposures,

or the relative doses. In essence, plaintiffs developed an opinion that helped prove the scientifically unprovable: that every exposure, even low-dose exposure to chrysotile asbestos, no matter how minute, caused the disease.

Probably the most widely cited standard of causation in asbestos cases is the *Lohrmann* “frequency, regularity, and proximity” test. *Borg-Warner Corp. v. Flores*, 232 S.W.3d 765, 769 (Tex. 2007). In *Lohrmann*, the Fourth Circuit Court of Appeals considered whether a trial court correctly directed a verdict in favor of four product manufacturers after determining that there was insufficient evidence of causation. *Lohrmann v. Pittsburgh Corning Corp.*, 782 F.2d 1156, 1162-63 (4th Cir. 1986). Proximate cause required evidence that “allow[ed] the jury to reasonably conclude that it is more likely than not that the conduct of a defendant was a substantial factor in bringing about the result.” *Id.* at 1162. The court rejected a proposed rule that “if the plaintiff can present any evidence that a company’s asbestos-containing product was at the workplace while the plaintiff was at the workplace, a jury question” is created. *Id.* at 1163. Instead, to avoid the risk of a de minimis rule, the court concluded, “[t]o support a reasonable inference of substantial causation from circumstantial evidence, there must be evidence of exposure to a specific product on a regular basis over some extended period of time in proximity to where the plaintiff actually worked.” *Id.* at 1162-63. This “every fiber” opinion, when accepted, also conveniently obviated the legal requirement to show frequent, proximate, and regular exposure. This worked, for a while. That was until courts started examining the opinion and the alleged bases of it.

While the seeds for the demise of the “every exposure” opinion were planted and germinating in several previous cases, *Lindstrom v. A-C Product Liability*, 264 F. Supp. 2d 583 (N.D. Ohio, 2003), *affirmed*, 424 F.3d 488 (6th Cir. 2005), laid the cornerstone for the eventual complete rejection of this litigation-driven opinion. In *Lindstrom*, the plaintiff’s expert opined that the “medical and scientific community cannot exclude any specific asbestos exposure” and “[e]ach of Mr. Lindstrom’s occupational exposures... were a substan-

tial factor.” 264 F. Supp. 2d at 588. The court disagreed, stating that the expert opine[d] that there is no safe level of asbestos exposure, and that every exposure to asbestos, however slight, was a substantial factor in causing Lindstrom’s disease. If an opinion such as Dr. Corson’s would be sufficient for plaintiff to meet his burden, the Sixth

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opinion, when accepted, also conveniently obviated the legal requirement to show frequent, proximate, and regular exposure.

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Circuit’s ‘substantial factor’ test would be meaningless.

Id.

The district court noted that a “defendant does not become liable based on a bare demonstration of ‘minimal exposure,’ even when the plaintiffs injuries arise from the relevant toxic substance” *Id.*

The Sixth Circuit affirmed, holding that “any hypothetical exposure, however slight,” is insufficient to prove substantial factor causation. *Lindstrom*, 424 F.3d at 493. These opinions and those cited in them set the tone and the foundation for the groundswell of courts that later recognized exactly what the “any exposure” opinion was: a scientifically unsound attempt to bypass substantial factor causation. *See, e.g., Barabin v. Scapa Dryer Fabrics, Inc.* No. C07-1454JLR, 2018 WL 840147, at *12 (W.D. Wash. 2018). While the “each and every fiber” opinion has changed in name and has metamorphosed several times as the exclusions continued to mount, the substance and the basic tenants remain the same: no matter how small, superficial, fleeting, irregular, or insubstantial an exposure to asbestos may be, it theoretically and mathematically increases a

person's risk of developing a disease and therefore must be a substantial causative factor. *Id.* at *11 (citing *Krik*, 870 F.3d at 672–73). And the overwhelming precedent since *Lindstrom* has been to exclude as unreliable the “any exposure” opinion. *Barabin*, 2018 WL 840147, at *12. The courts have excluded it by other names as well. See, e.g., *Schwartz v. Honeywell Intl.*,

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Although the Pennsylvania Supreme Court in *Gregg* did not require a quantitative assessment of dose as the Texas Supreme Court had, it likewise rejected the “every exposure” opinion.

Inc., Slip Op. No. 2018-Ohio-474 (2018); *McIndoe v. Huntingon Ingalls Inc.*, 817 F.3d 1170, 1177–78 (9th Cir. 2016).

***Borg-Warner* and *Gregg* and the Dismissal of the “Every Exposure” Opinion**

Although *Lindstrom* set the foundation for rejecting the “every exposure” opinion, the tidal wave began after *Borg-Warner*, 232 S.W.3d at 769, and *Gregg v. V-J Auto Parts, Company*, 596 Pa. 274 (Pa. 2007). Both of these cases marked a significant change in the environment for the “each and every exposure” opinion. In these decisions two state supreme courts in jurisdictions with large dockets of asbestos cases specifically rejected the “each and every exposure” opinion.

In *Borg-Warner*, the Texas Supreme Court concluded that “exposure to ‘some’ respirable fibers” was not “sufficient to show that a product containing asbestos was a substantial factor in causing asbestosis.” *Borg-Warner*, 232 S.W.3d at 765. Although asbestosis is a dose-dependent disease, see *id.*, the plaintiff’s experts failed to offer an opinion regarding how much asbestos the plaintiff inhaled, and

the court concluded that “absent any evidence of dose, the jury could not evaluate the quantity of respirable asbestos to which [the plaintiff] might have been exposed or whether those amounts were sufficient to cause asbestosis.” *Id.* at 776. The court ultimately required the plaintiff to offer some defendant-specific quantitative evidence of the plaintiff’s approximate dose, coupled with evidence that the dose was a substantial factor in causing the asbestos-related disease. *Id.* at 773. The court found that this requirement was critical, given asbestos’s prevalence in the ambient air and that “everyone” is exposed to asbestos. *Id.*

Although the Pennsylvania Supreme Court in *Gregg* did not require a quantitative assessment of dose as the Texas Supreme Court had, it likewise rejected the “every exposure” opinion. In *Gregg*, the court noticed this:

[I]t is common for plaintiffs to submit expert affidavits attesting that any exposure to asbestos, no matter how minimal, is a substantial contributing factor in asbestos disease. However... such generalized opinions do not suffice to create a jury question in a case where exposure to the defendant’s product is *de minimus*.

596 Pa. at 291. Specifically, it concluded that a plaintiff must qualitatively prove substantial factor causation, focusing on the frequency, regularity, and proximity of the exposure to asbestos. *Id.* at 292. These two cases pushed the wave of subsequent court decisions rejecting these opinions as unscientific and contrary to law.

Widespread Rejection of the “Every Exposure” Opinion and the “Cumulative Dose” Opinion

After *Gregg*, numerous courts in various jurisdictions adopted a similar qualitative analysis, as opposed to the quantitative requirements of *Borg-Warner*. For example, supreme courts in Georgia (*Scapa Dryer Fabrics, Inc. v. Knight*, 299 Ga. 286, 291–94 (Ga. 2016)), Nevada (*Holcomb v. Georgia Pacific, LLC*, 289 P.3d 188 (Nev. 2012)), Ohio (*Schwartz v. Honeywell Intl., Inc.*, Slip Op. No. 2018-Ohio-474 (Ohio 2018)), and Virginia (*Ford Motor Co. v. Boomer*, 736 S.E.2d 724, 732–33 (Va. 2013)), as well as the Ninth (*Estate of Barabin v. AstenJohnson, Inc.*, 740 F.3d 457, 467

(9th Cir. 2014)), Seventh (*Krik v. Exxon Mobil Corp.*, 870 F.3d 669, 673–75 (7th Cir. 2017)), and Sixth Circuits (*Martin v. Cincinnati Gas & Elec. Co.*, 561 F.3d 439, 443 (6th Cir. 2009)), have all rejected the “every exposure” opinion or some version of it based on either its scientific unreasonableness or its inconsistency with substantial factor causation.

Although plaintiffs’ experts sometimes change the name of the opinion (“every fiber, every exposure,” “every exposure above background,” or “cumulative dose”), the “any exposure” opinion remains inadmissible for the same reasons as “every exposure” opinion. The next section analyzes decisions excluding the “any exposure” opinion. First, it examines inadmissibility under *Daubert* and Rule 702 for a lack of scientific methodology. Then it examines exclusion because of incompatibility with substantial factor causation.

Rejection of the “Any Exposure” Opinion Under *Daubert* and *Frye*

The decisions that have excluded the “any exposure” opinion in asbestos litigation under Federal Rule 702 have done so for a combination of reasons. Notably, all center and refer back to the fact that this opinion is unscientific and not based on any methodology, let alone a reliable one.

The “Any Exposure” Opinion Ignores Dose

Because “the dose makes the poison,” it is essential that any expert causation opinion consider dose. Given this, courts across the country have excluded expert testimony when the expert fails to consider or analyze dose.

Recently, the Seventh Circuit Court of Appeals in *Krik* highlighted the unreliability and scientific fallacy that underlies a plaintiff’s expert’s methodology when it excluded the proffered “cumulative exposure” opinion, an outgrowth of the “any exposure” opinion. *Krik* found that the expert’s opinion was unreliable because it “ignored fundamental principles of toxicology that illnesses like cancer are dose dependent.” *Krik*, 870 F.3d at 675. Further, the expert failed in other ways.

[The expert] had not presented any individualized analysis of the level of asbestos exposure, had provided only

generalized citations to scientific literature with no indication that they were authorities upon which the experts would rely, did not identify any peer-reviewed scientific journal adopting this theory, did not cite any medical studies or discuss an error rate.

Id. In sum, the court in *Krik* highlighted and noted the unreliability and scien-

Another major flaw in these opinions is that they inherently fail to address the particular agent at issue and to distinguish between fiber types and relative potencies.

tific fallacy that underlies the “any exposure” opinion.

Similarly, in *In re New York City Asbestos Litig.*, 48 N.Y.S.3d 365 (N.Y. App. Div. 2017), the New York Court of Appeals, under *Frye*, excluded expert testimony. In reaching this conclusion the court explained that it was not enough simply to offer evidence that asbestos has been linked to mesothelioma. Rather, to determine liability, an expert must establish “that the plaintiff was exposed to sufficient levels of the toxin from the defendant’s products to have caused his disease.” *Id.* at 368 (emphasis added) (citing *Sean R. ex rel. Debra R. v. BMW of N. Am., LLC*, 48 N.E.3d 937, 942 (N.Y. 2016)). The court further explained that the expert must establish this through a scientifically reliable method “based on a plaintiff’s work history, or comparing the plaintiff’s exposure with that of subjects of reported studies.” *Id.* (citing *Parker*, 857 N.E.2d at 1121–22).

Most recently, in *Doolin v. Ford Motor Company, et al.*, the United States District Court for the Middle District of Florida discussed many of the fallacies and inadequacies of the “any exposure” opinion and reiterated once again that dose mat-

ters. No. 3:16-CV-778-J-34PDB, 2018 WL 4599712 at *1 (M.D. Fla. Sept. 25, 2018). In *Doolin*, the plaintiffs argued, “quantification of asbestos exposure is not necessary because brief, low-level exposures to asbestos have been shown to cause mesothelioma and a safe or threshold level of asbestos exposure below which mesothelioma will not occur has never been identified.” *Id.* at *6. However, the court in *Doolin* disagreed. Instead, the court held the plaintiffs’ experts’ opinions were unreliable for multiple reasons, including because he reached his opinion without “making any attempt to analyze the Decedent’s specific dose of asbestos and the degree to which it increased his risk of developing mesothelioma.” *Id.* at *17. At bottom, as the courts in *In re New York City Asbestos Litig.*, *Krik* and *Doolin* held, expert opinions based on cumulative exposure, or any variation, are unreliable because they fail to assess or account for dose. Without some assessment of dose and the attendant risk, if any, it is impossible to determine whether a plaintiff’s exposure to a specific product caused or contributed to cause his or her cancer.

“Asbestos” Is Not “Asbestos,” as Plaintiffs Want to Argue

Another major flaw in these opinions is that they inherently fail to address the particular agent at issue and to distinguish between fiber types and relative potencies. There are significant differences between amphibole and chrysotile asbestos: some texts describe amphiboles as being up to 1,000 times more potent. T.A. Sporn, *The Mineralogy of Asbestos*, in *Pathology of Asbestos-Associated Diseases* 7 (Tim D. Oury *et al.*, eds., 3d ed. 2014). Further, most plaintiffs’ experts readily admit that amphibole fibers are more potent than chrysotile. Thus, plaintiffs’ experts should not be able to base their opinions that all fibers that make up a “cumulative dose” are necessarily causative without performing some type of dose assessment. For this reason, it is *the specific mineral type* of “asbestos,” and not “asbestos” as a whole, that is relevant to the inquiry. See *Yates v. Ford Motor Co.*, 113 F. Supp. 3d 841, 854 (E.D.N.C. 2015) (citing *Westberry*, 178 F.3d at 263) (emphasis added). The failure to assess the dose of the par-

ticular product(s) and fiber type(s) at issue as well as whether those doses have been shown to increase one’s risk of developing mesothelioma and the degree that such a dose increased the risk should be fatal to the opinion. While “cancer can have multiple concurrent causes, this does not relieve [an expert] of the obligation to analyze the role played by each potential cause.” *Doolin* at 16.

Thus, the causation opinion should also include an adequate assessment of the contribution of each potential cause of a plaintiff’s mesothelioma and explain why each was not likely the sole cause of the cancer *Doolin* at 17. And, given the differences, it should include an assessment of different products and different fiber types as different potential causes.

Precautionary Is Not Proximate Cause

Plaintiffs attempt to use commentary from regulatory bodies or nongovernmental organizations in an effort to bolster the reliability of their “any exposure” opinion. This is done in three ways. First, plaintiffs’ experts argue that “any exposure” is reliable because there is “no safe level of exposure.” However, courts reject this position for multiple reasons. One, it is a misstatement of the regulatory standard, because in most dose-response relationships, a threshold exists, even if it is not known with any mathematical precision. *Eaton, supra*, at 16–17. Thresholds refer to the dose “below which even repeated, long term exposure would not cause an effect in any individual.” *Id.* at 16. However, scientifically, it is difficult to establish a threshold for lower and lower levels of exposure, especially as those exposures approach background levels. Given this difficulty, regulatory agencies, such as the Occupational Safety and Health Administration and the U.S. Environmental Protection Agency, have stated that there is “no known safe level” of asbestos exposure. Plaintiffs’ experts’ argument that “no known safe level” equates to “no safe level” is a misstatement: the absence of conclusory proof about where the threshold lies does not mean that there is no threshold.

Additionally, while many believe that the dose-response curve may be based on a linear, no-threshold model, this is an assumption, and only an assumption,

when assessing low-dose exposure. And it is an assumption that must be put into context, particularly when there is evidence of “no observable adverse effect levels,” (NOAELs), which are the highest doses below which no statistically significant increased risk of the development of disease has been observed. “Any exposure” proponents maintain that even if an NOAEL has been established, there is no “safe” level because a specific numerical threshold has not been definitively established below which someone can say with absolute scientific certainty that disease will not occur. However, science does not work in absolutes, and this is simply asking too much, perhaps intentionally.

Daubert jurisprudence is clear: public health standards of risk cannot support conclusions on causation. This is because they “address[] risk, not cause, and there is a significant distinction between those two concepts.” Agencies are charged with protecting workers and the environment. They cannot wait for conclusive medical and scientific causation evidence before pursuing protective regulatory policies. Instead, to protect those who may be exposed, they rely on a “precautionary principle.” *E.g. Matrixx Initiatives, Inc. v. Siracuso*, 131 S. Ct. 1309, 1320 (2011). Regulatory agency “analysis involves a much lower standard than that which is demanded by a court of law.” *Rider v. Sandoz Pharms. Corp.*, 295 F.3d 1194, 1201 (11th Cir. 2002). It cannot be the foundation for causation opinions. *Dellinger v. Pfizer, Inc.*, 2006 WL 2057654, at *9 (W.D.N.C. July 19, 2006). It is well settled that those statements from regulatory agencies finding that there is “no known safe level” are not scientific proof and cannot be used as support a causation opinion, and defendants should be prepared to attack opinions citing such statements.

Most recently, *Doolin* highlighted the deductive fallacy of inferring that “any exposure” is causative from the statement “no known safe level.” In *Doolin*, the plaintiffs and their expert, Dr. Kradin, justified the failure to calculate dose by stating “there is no safe level (or threshold) of exposure to asbestos that has been shown not to cause mesothelioma.” *Doolin* at *13. The court rejected this subterfuge noting that, a precautionary statement of “no

known safe level” made in regulatory commentary “is not the same as affirmatively demonstrating that all levels of exposure to all types of asbestos can cause mesothelioma, nor does it mean that all levels of exposure to all types of asbestos carry the same risk.” *Id.* The court continues,

This statement reveals the backwards reasoning underlying Kradin’s causation opinion. Kradin starts from the premise that mesothelioma is most often caused by exposure to asbestos, and from there reasons that the Decedent’s exposure to asbestos must have been sufficient to cause mesothelioma because the Decedent did in fact develop mesothelioma. This backwards logic is not a reliable basis for a causation opinion,....

Id.

Downward Extrapolation of Studies Is Not Scientific Proof

To prove that a given injury was “caused by exposure to a specified substance,” a plaintiff must demonstrate “the levels of exposure that are hazardous to human beings generally,” and “the plaintiff’s actual level of exposure.” *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 263 (4th Cir. 1999) (internal quotations omitted). The studies that exist showing a high incidence of asbestos disease appear most frequently in trades that were exposed to very high concentrations of amphibole asbestos over long periods. These professions include insulators, asbestos factory workers, miners, ship workers, and textile workers. The existing studies demonstrate that the disease follows a dose-response relationship that approaches, at least at the higher exposure levels experienced by those workers, a linear relationship between the lifetime fiber burden of amphibole asbestos and the incidence of disease. There are no articles or similar studies for low level of exposure.

Because there are no epidemiological studies of exposure to chrysotile asbestos at the cumulative doses that plaintiffs’ experts now say will cause disease, they look to general statements of assumed risk derived from an extrapolation of high-dose studies, mostly on amphibole asbestos products, as proof of causation at low levels of exposure to chrysotile asbestos. Plaintiffs’ experts therefore rely on a theo-

retical mathematical risk and an assumed linear no-threshold relationship that presupposes that low levels of exposure produces a theoretical level of mesothelioma at extremely low levels of exposure. See *In re Toxic Substances Cases*, No. A.D. 03-319, 2006 WL 2404008, at *6 (Pa. Com. Pl. Aug. 17, 2006). As the court in *In Re Toxic Substance* aptly stated:

There are no studies that demonstrate general causation of mesothelioma at the low levels about which plaintiffs’ experts are opining or that can distinguish a resulting disease from a spontaneous or idiopathic mesothelioma.

[T]he fallacy of the “extrapolation down” argument is plainly illustrated by common sense and common experience. Large amounts of alcohol can intoxicate, larger amounts can kill; a very small amount, however, can do neither. Large amounts of nitroglycerine or arsenic can injure, larger amounts can kill; small amounts, however, are medicinal. Great volumes of water may be harmful, greater volumes or an extended absence of water can be lethal; moderate amounts of water, however, are healthful. In short, the poison is in the dose.

Id. at *7.

In sum, there are no studies that demonstrate general causation of mesothelioma at the low levels about which plaintiffs’ experts are opining or that can distinguish a resulting disease from a spontaneous or idiopathic mesothelioma. Given this logical fallacy, courts have often found opinions that rely on downward extrapolation to be unreliable.

The “Any Exposure” Opinion Is an Unscientific Litigation-Driven Opinion That Is Based on an Untested Hypothesis

The “any exposure” opinion is a litigation-driven construct, which, while oft-repeated in the litigation, it is not widely published or accepted in the peer-reviewed literature. Further, the opinion is based on hypotheses that have not been scientifically tested

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opinion is a litigation-driven construct, which, while oft-repeated in the litigation, it is not widely published or accepted in the peer-reviewed literature. Further, the opinion is based on hypotheses that have not been scientifically tested and proved.

and proved. The ability to test an expert’s theory or technique is a key consideration in determining the reliability of an expert’s opinion. *Daubert*, 509 U.S. at 593. Without the ability to test the theory, scientists are unable to engage in any meaningful peer review. See *Anderson v. Ford Motor Co.*, 950 F. Supp. 2d 1217, 1224 (D. Utah 2013). Further, if a theory rests on an untestable hypothesis, then by definition, the potential error rate is incalculable. See *Butler v. Union Carbide Corp.*, 712 S.E.2d 537, 552 (Ga. App. 2011). Accordingly, defendants should be prepared to attack and highlight the lack of testing to prove the “no safe level” precept.

These Opinions Are Incompatible with Substantial Factor and Specific Causation

Beyond unscientific methodology and unreliability, one of the key reasons why

courts have excluded these opinions is that they eviscerate the “substantial factor” requirement for specific causation discussed above. Most recently, the Ohio Supreme Court explicitly rejected expert opinion, whether it was called “every exposure” or “cumulative dose,” finding that it negated substantial factor causation. *Schwartz*, 2018-Ohio-474.

In *Schwartz*, the plaintiff’s decedent alleged second-hand exposure to asbestos through her father’s occupational and para-occupational exposure. *Id.* at ¶ 3. At trial, the plaintiff’s medical expert testified that it had been proved that there was no safe level and no threshold at which mesothelioma will not occur, and thus, the decedent’s cumulative exposure to asbestos over her lifetime was a substantial factor. *Id.* at ¶ 7. The Ohio Supreme Court reversed an eight-figure jury verdict, holding that the cumulative-exposure opinion was insufficient as a matter of law. *Id.* at ¶¶ 16–24. Instead, substantial factor causation requires an individualized finding for *each defendant* that exposure to that defendant’s asbestos-containing product was a substantial factor in causing the disease, while the cumulative-exposure opinion, on the other hand, examines all defendants and all products *in the aggregate*. *Id.* at ¶ 18.

In many of these cases, the plaintiffs go to great lengths in an attempt to distinguish the “cumulative exposure” opinion and the “any exposure above background” opinion from the “any exposure” opinion. However, many cases, including *Krik* and *Schwartz* have found that the opinions were no different from each other and *Doolin* reiterated what numerous courts have found that “this distinction makes no difference.” *Doolin* at 12, FN 14. *Schwartz*, *Krik*, *Barabin* and *Doolin*, in many ways encapsulate the accumulation of years of developing jurisprudence regarding the unsoundness of these opinions on causation. As noted by the courts, allowing plaintiffs’ experts to offer the “any exposure” opinion allows plaintiffs to hold virtually any and all defendants liable because it necessarily equates identification with causation. Thus, given sufficient time and proper records and arguments, it seems as if most courts are likely to exclude the “each and every” derivation of the “any exposure” opinion as unreliable or contrary to law. Despite any previous split among

the courts, it is clear that “the law is now headed toward a consensus that the ‘every exposure’ theory is unreliable and inadmissible.” *Barabin*, 2018 WL 84014, at *12.

“Any Exposure” by Any Other Name Is Still Inadmissible

From a practical perspective, it is important to cross-examine vigorously the experts who push this opinion. The focus should be establishing such an expert’s basis for the opinion, or lack of any, and to create a sufficient record to challenge the scientific reliability of the opinion and the assumptions on which the opinion is based. This will allow defendants to demonstrate the opinion’s incompatibility with substantial factor causation. In this analysis, revealing that the expert failed to engage in a sufficient analysis of dose for the alleged exposure to a defendant’s product and that he or she cannot establish causation for this dose of chrysotile asbestos is crucial.

Courts should preclude experts from offering an ultimate opinion on causation when they have failed to point to a dose that has been scientifically demonstrated as sufficient to cause the disease (general causation), or when experts have failed to assess the plaintiff’s dose, as explained in detail above. In such situations, as previously discussed, courts have taken a careful look at the “any exposure” opinion have excluded it: “A holding to the contrary would permit imposition of liability on the manufacturer of any product with which a worker had the briefest of encounters on a single occasion.” *Lindstrom*, 424 F.3d at 493. An opinion that does not either quantitatively or qualitatively assess the specific dose of asbestos that a plaintiff may have been exposed to, overall and from a specific defendant’s product, ignores the fundamental tenet of toxicology and should not be admissible.

Courts now almost uniformly agree that the “any exposure” opinion is inadmissible. No matter how plaintiffs’ experts spin the opinion, or how they or plaintiffs’ attorneys change the name, calling the “any exposure” opinion by any other name is simply subterfuge—a Trojan horse designed to fool. In the end, these efforts amount to nothing more than putting lipstick on a pig, and with apologies to Shakespeare, by any other name, the “any exposure” opinion still stinks as badly as it always has. 