

65 P.3d 591 (2003)

2003 OK 10

Dwain Lee CHRISTIAN, III, individually and as parent and next friend of Malorie Christian and Michah Christian, minors, Petitioners,

v.

Karl GRAY, Judge of the District Court of Oklahoma County, Respondent, and Mid-South Abatement Company, Inc., Lippert Bros., Inc., State Fair of Oklahoma, Inc., and the City of Oklahoma City, Real Parties In Interest.

No. 96.813.

Supreme Court of Oklahoma.

February 11, 2003.

As Corrected February 24, 2003.

594 *594 Mickey James and Andrew W. Gass, Green, James & Williams, Oklahoma City, OK, for Petitioners.

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Christian S. Huckaby, Looney, Nichols & Johnson, Oklahoma City, OK, for Real Party in Interest City of Oklahoma City.

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Rex K. Travis, Oklahoma City, OK (Thomas A. Wallace, Norman & Edem, Oklahoma City, of counsel on the brief) for Amicus Curiae Oklahoma Trial Lawyers Association.

Karen M. Grundy & Jon Starr, Tulsa, OK, for Amicus Curiae Oklahoma Association of Defense Counsel.

SUMMERS, J.

¶ 1 The Christians brought suit in the District Court of Oklahoma County after they had attended a circus performance at the State Fair Arena in Oklahoma City. They alleged that they were injured by airborne chemicals they inhaled while attending the circus. The trial court ruled that Plaintiffs' expert witness was not competent to give a medical opinion on the cause of injury. We assume original jurisdiction on Plaintiffs' application, and issue a writ to the trial court with instructions to provide the parties an opportunity to present the determinative issues as we view them to be proper under the *Daubert* and *Kumho* cases.

I. Assuming Original Jurisdiction

¶ 2 Defendants filed a motion *in limine* to exclude the testimony of Plaintiffs' expert witness on the issue of the causation of Plaintiffs' injuries. The trial court granted the motion, and stated that the expert was not competent to give a medical opinion on the cause of Plaintiffs' injuries. The trial court relied upon *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), and *Kumho Tire Co., Ltd. v. Patrick Carmichael et al.*, *595 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999). This Court has not previously determined whether *Daubert* and its progeny apply to civil proceedings in this State.^[1] Several states have adopted or use *Daubert* when determining admissibility of an expert's opinion.^[2]

596 *596 ¶ 3 By previous order of the Court this controversy was recast from a proceeding seeking certiorari of an interlocutory

order to an application for extraordinary relief and assumption of original jurisdiction. This matter is one of first impression. Recasting such a proceeding is procedurally proper,^[3] and assuming original jurisdiction serves the interests of judicial economy and clarifying new procedural questions for courts statewide.^[4] An extraordinary writ proceeding is not the usual procedure for reviewing the correctness of an order that limits testimony to be presented at a subsequent trial. Ellison v. Ellison, 1996 OK 64, 919 P.2d 1, 2. Our assumption of jurisdiction in this matter is tied to the importance of this first-impression issue for a procedure to be used by courts statewide, and we caution parties that this Court will not serve as a pre-trial reviewing court for orders adjudicating motions *in limine*. We thus assume original jurisdiction to decide the controversy before us. We determine that oral argument will not materially assist the Court, and deny the application of State Fair of Oklahoma Inc. for *en banc* oral argument.

II. *Daubert* and its Progeny

¶ 4 Plaintiffs alleged that they were injured by airborne chemicals that they inhaled while attending a circus in the State Fair Arena. Defendants filed a motion *in limine* to exclude the testimony, opinions, and exhibits of Plaintiffs' expert on the issue of the causation of Plaintiffs' injuries. The trial court granted the motion, stating that plaintiffs' expert "is not competent to give a medical opinion on the cause of injury based upon the test set forth in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), Kumho Tire Co., Ltd. v. Patrick Carmichael et al., 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999) and their progeny." First, we must determine if *Daubert* and its progeny apply, and then if so, whether *Daubert* was applied correctly.

¶ 5 In Oklahoma the testimony of an expert is controlled by the applicable statutes found in the Oklahoma Evidence Code, 12 O.S.2001 § 2702 (Testimony by Experts);^[5] § 2703 (Bases of Opinion Testimony by Expert);^[6] § 2704 (Opinion on Ultimate Issue);^[7] and § 2705 (Disclosure of Facts or Data Underlying Expert Opinion).^[8] The Oklahoma Evidence Code was adopted in 1978 by our Legislature and was modeled, in most parts, after the then current Federal Rules of Evidence. 1 L. Whinery, *Oklahoma Evidence, The Guide to the Oklahoma Evidence Code*, Preface, (1985); 1978 Okla.Sess.Laws c. 285 (eff.Oct.1, 1978).

¶ 6 Professor Whinery has explained that § 2702 is "identical in substance" to Federal Rule 702, §§ 2703 and 2704 are identical to Rules 703 and 704, and § 2705 has slightly different language than that in Rule 705 but "[t]here is no indication that the Legislature intended a substantive change" by the modification. 1 L. Whinery, *Evidence*, at 238, 243, 247, 255. We have said that federal court decisions may be examined for persuasive value when they construe federal evidence rules with language substantially similar to that in our evidence statutes. Willoughby v. Oklahoma City, 1985 OK 64, 706 P.2d 883, 887. We thus turn to the discussion of *Daubert*.

¶ 7 In *Daubert* the Court observed that the previously used general-acceptance test in Frye v. United States, 54 App.D.C. 46, 47, 293 F. 1013 (1923), for the admissibility of scientific evidence had been displaced by the Federal Rules of Evidence. The Court explained that Federal Rules imposed certain limits on the admissibility of such evidence. The Court also explained the trial judge's role in applying these limits. First, the trial judge examines the relevance and reliability of the evidence: "under the Rules the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but must be 'scientific' and reliable." Daubert, 509 U.S. 579, at 589, 113 S.Ct. 2786. The Court said that "[t]he primary locus of this obligation is Rule 702, which clearly contemplates some degree of regulation of the subjects and theories about which an expert may testify." *Id.* The Court noted that "In a case involving scientific evidence, evidentiary reliability will be based upon scientific validity." Daubert, 509 U.S. at n. 9, 590, 113 S.Ct. 2786, (emphasis in original).

¶ 8 *Daubert* provided a list of factors for the trial judge to consider when determining the admissibility of evidence. They include: 1. Can the theory or technique be, or has it been, tested; 2. Has the theory or technique been subjected to peer review and publication; 3. Is there a "known or potential rate of *598 error ... and the existence and maintenance of standards controlling the technique's operation;" and 4. Is there widespread acceptance of the theory or technique within the relevant scientific community. Daubert, 509 U.S. at 593-594, 113 S.Ct. 2786.^[9] The inquiry is a flexible one, and focuses on the evidentiary relevance and reliability underlying the proposed submission, and not on the conclusions they

generate. *Id.* 509 U.S. at 595, 113 S.Ct. 2786.

¶ 9 The evidence must also "assist the trier of fact to understand the evidence or to determine a fact in issue." This requirement "goes primarily to relevance." *Daubert*, 509 U.S. at 591, 113 S.Ct. 2786. Rule 702 thus "requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility." *Daubert*, 509 U.S. at 592, 113 S.Ct. 2786.

The Court then explained the trial judge's role:

Faced with a proffer of expert scientific testimony, then, the trial judge must determine at the outset, pursuant to Rule 104(a), whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue. This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue. We are confident that federal judges possess the capacity to undertake this review. Many factors will bear on the inquiry, and we do not presume to set out a definitive checklist or test.

Daubert, 509 U.S. at 592-593, 113 S.Ct. 2786, notes omitted.

Daubert explained that preliminary questions concerning the qualification of a person to be a witness and the admissibility of evidence is determined by the court. *Daubert*, 509 U.S. 579, n. 10, 593, 113 S.Ct. 2786, *citing*, Federal Rule 104. We have a similar requirement in our Evidence Code at 12 O.S.Supp.2002 § 2105.

§ 2105. Preliminary questions

A. Preliminary questions concerning the qualifications of a person to be a witness, the existence of a privilege or the admissibility of evidence shall be determined by the court, subject to the provisions of subsections B and C of this section.

B. A person claiming a privilege must prove that the conditions prerequisite to the existence of the privilege are more probably true than not. A person claiming an exception to a privilege must prove that the conditions prerequisite to the applicability of the exception are more probably true than not. If there is a factual basis to support a good faith belief that a review of the allegedly privileged material is necessary, the court, in making its determination, may review the material outside the presence of any other person.

C. When the relevancy of evidence depends upon the fulfillment of a condition of fact, the judge shall admit it upon, or subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition.

D. Hearings on the admissibility of confessions shall be conducted in all cases out of the hearing of the jury. Hearings on other preliminary matters shall also be conducted out of the hearing of the jury when the interests of justice require or when requested by an accused who is a witness.

E. The accused does not subject himself to cross-examination on other issues in the case by testifying upon a preliminary matter.

F. This section does not limit the right of a party to introduce before the jury evidence relevant to weight or credibility.

12 O.S.Supp.2002 § 2105.

599 Thus a trial judge's decision to prevent improper testimony from an expert witness is *599 not new to our jurisprudence.^[10] Our Evidence Code currently recognizes the gatekeeping capacity of a trial judge, and *Daubert* is but a refinement of this role.

¶ 10 The High Court thereafter decided *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238

(1999). The Court explained that in Rule 702 "scientific" was merely one type of expert testimony, and that "technical or other specialized knowledge" were also types of expert testimony in Rule 702, and were thus governed by the *Daubert* opinion. This language [in the Rule] makes no relevant distinction between "scientific" knowledge and "technical" or "other specialized" knowledge. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 147, 119 S.Ct. 1167, 143 L.Ed.2d 238, (explanatory phrase added). Our Evidence Code (§ 2702), like its federal counterpart, does not appear to make a distinction between "scientific" knowledge and "technical" or "other specialized" knowledge.

¶ 11 The High Court has stated that a trial court must make a determination of the reliability of an expert's evidence when it is sufficiently challenged.

And where such testimony's factual basis, data, principles, methods, or their application are called sufficiently into question,... the trial judge must determine whether the testimony has "a reliable basis in the knowledge and experience of [the relevant] discipline."

Kumho Tire Co., Ltd. v. Carmichael, 526 U.S. at 149, 119 S.Ct. 1167, quoting, *Daubert*, 509 U.S. at 592, 113 S.Ct. 2786. In *Daubert* the Court indicated that this reliability determination is not limited to novel or "unconventional" evidence.

Although the *Frye* decision itself focused exclusively on "novel" scientific techniques, we do not read the requirements of Rule 702 to apply specially or exclusively to unconventional evidence. Of course, well-established propositions are less likely to be challenged than those that are novel, and they are more handily defended. Indeed, theories that are so firmly established as to have attained the status of scientific law, such as the laws of thermodynamics, properly are subject to judicial notice under Federal Rule of Evidence 201.

Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, n. 11, 593, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), (emphasis added). Our Court of Criminal Appeals has determined that *Daubert* shall apply to novel scientific evidence in criminal proceedings. *Taylor v. State*, 1995 OK CR 10, 889 P.2d 319, 328. See *Gilson v. State*, 2000 OK CR 14, ¶¶ 62-64, 8 P.3d 883, 907, (noted adoption in *Taylor* and then applied *Daubert*). After *Kumho* the court held that *Daubert* should be applied to all novel expert testimony. *Harris v. State*, 2000 OK CR 20, ¶¶ 8-9, 13 P.3d 489, 492-493, cert. denied, 532 U.S. 1025, 121 S.Ct. 1971, 149 L.Ed.2d 764 (2001). Then in *Kumho* the U.S. Supreme Court stated that when the evidence is not novel a trial court may make that determination and avoid a prolonged *Daubert* inquiry. The Court stated that a federal trial judge possesses the authority "needed both to avoid unnecessary 'reliability' proceedings in ordinary cases where the reliability of an expert's methods is properly taken for granted, and to require appropriate proceedings in the less usual or more complex cases where cause for questioning the expert's reliability arises." *Kumho Tire Co., Ltd. v. Carmichael et al.*, 526 U.S. 137, 152, 119 S.Ct. 1167, 143 L.Ed.2d 238, emphasis added. We agree with the Court of Criminal Appeals that a *Daubert* inquiry will be limited to circumstances where the reliability of an expert's *600 method cannot be taken for granted.^[11] Thus, a *Daubert* challenge includes an initial determination of whether the expert's method is one where reliability may be taken for granted.

¶ 12 Plaintiffs assert by brief in this Court that *Daubert* applies to only novel evidence. We have no record before us showing argument in the trial court by Plaintiffs that the methods of their expert showed a facial reliability for the type of conclusion the expert made. On the other hand, Defendants' argument presupposes the absence of such reliability and that a *Daubert* proceeding is necessary. We decline to address further this argument, except as it pertains to the issue of causation discussed later in this opinion. This issue we leave to the parties to address in the trial court upon conclusion of this extraordinary proceeding.

¶ 13 In *Kumho Tire Co., supra*, the Court explained that a trial court has some latitude in applying the *Daubert* factors of reliability: "Thus, whether *Daubert's* specific factors are, or are not, reasonable measures of reliability in a particular case is a matter that the law grants the trial judge broad latitude to determine." *Kumho*, 526 U.S. at 153, 119 S.Ct. 1167. Thus, the *Daubert* factors are not a rigid standard applicable in every case.

The *Daubert* factors "may" bear on a judge's gatekeeping determinations, however. The four *Daubert* factors "may or may not be pertinent"; it will all depend "on the nature of the issue, the expert's particular

expertise, and the subject of his testimony." Determining which factors are indicative of reliability in a particular case cannot be accomplished solely by a categorical a priori characterizations about the particular field in question. The Court explained: "Engineering testimony rests upon scientific foundations, the reliability of which will be at issue in some cases.... In other cases, the relevant reliability concerns may focus upon personal knowledge or experience." In all cases, a court must exercise its gatekeeping obligation so that the expert, whether relying on "professional studies or personal experience," will, when testifying, employ "the same level of intellectual rigor" that the expert would use outside the courtroom when working in the relevant discipline.

Federal Judicial Center, *Reference Manual on Scientific Evidence*, 19 (2d ed.2000), quoting, *Kumho. supra*.

A trial court must thus make a determination of the appropriate factors of reliability for the particular controversy before it based upon the nature of that controversy.

¶ 14 Nothing in *Daubert* or *Kumho* conflicts with our Evidence Code. Our Court of Criminal Appeals has already adopted *Daubert* for criminal proceedings in Oklahoma Courts. Today we likewise adopt *Daubert* and *Kumho* as appropriate standards for Oklahoma trial courts in deciding the admissibility of expert testimony in civil matters.

III. Causation

¶ 15 This proceeding is not an appeal, but a challenge to a District Court's order in an action independent to the one before the trial court, and we examine the arguments presented to the trial court and appearing in the record prepared for us by the parties. We thus decline to consider the affidavit of Plaintiff's expert signed and filed herein approximately two months after the decision of the trial court.^[12]

601 *601 ¶ 16 The medical doctor testified in his deposition that one of the Plaintiffs had permanent impairment in his breathing ability. He testified that he did not have any tests of plaintiff's breathing ability before he attended the circus, that Plaintiff's impairment was a restrictive lung disease, and that restrictive lung impairments could be caused from a variety of sources. He stated that he took into account the previous sinus problems of the Plaintiff, and that such problems would not cause the type of permanent lung impairment suffered. He also stated that viral infection could not have caused the impairment, and that there was no evidence of bacterial infection. He stated that he did not "know exactly what was there in the air" in the arena on the day of the circus and that he could not state the exact cause of the impairment. He stated that Plaintiff's exposure to lime in the form of an inhalant could have caused the lung impairment. He stated that his opinion, with a reasonable degree of medical certainty, was that "lime exposure or some other type of inhalant that they were exposed to at that time has caused their lung damage."

¶ 17 Defendants focused their questions to the doctor on his knowledge of lime. He stated that he had seen some lime exposure cases resulting in a "lime burn" on patients "but that's not what we're dealing with here." He testified that he knew of no studies on airborne lime exposure, or any studies linking exposure of airborne lime to respiratory impairments. He stated that he was not a specialist in toxic chemistry, environmental chemistry, or a pulmonologist. He stated that he did not know the type of cement used at the State Fair Arena, or the percentage of lime used. He stated that he was not familiar with how lime travels through the air, or how long it remains airborne. He stated that he was not aware of the quantity of airborne lime at the time of the circus.

¶ 18 The doctor further stated that Plaintiffs' symptoms could have been caused by a "number of things" that could have been airborne. "The only thing that I can give a reasonable, you know, degree of medical certainty is that perhaps the lime exposure or some other type of inhalant that they were exposed to at that time has caused their lung impairment." He stated that he would tell the jury that "I'm going to say from their history and from what I have seen, it's possible that this could be caused from some exposure to chemicals. What chemicals and is it Lime? I don't know." He further testified that a "big-time allergy" could cause the impairment, and that the allergic reaction could be caused by pollens, grasses, and dust in general. In sum, the doctor testified that Plaintiffs' permanent restrictive lung impairment was a type that is observed after exposure to certain materials as inhalants, and that lime could have been one of these materials.

¶ 19 Plaintiffs also produced for the trial court an analysis of samples of material collected from the State Fair Grounds Arena eighteen days after the circus. That report contains the following:

... Visual observation showed considerable fine material which could certainly become airborne with foot traffic. We checked the pH on a 1:1 paste and found the pH to be 11.53—a highly alkaline material. The sample was subjected to Scanning Electron Microscopy ... [t]he results for sample A are consistent with the sample being comprised of a mixture of sand (SiO₂) and lime (CaO or Ca(OH)₂).

Defendants challenged this report in the trial court, and argued that the person who collected the white powder could not testify whether it was in the air eighteen days earlier at the time of the circus.

¶ 20 The doctor, a medical professional, was asked to give an opinion as an expert on the issue of the cause of Plaintiffs' medical injuries. When an injury is of a nature requiring a skilled and professional person to determine cause and the extent thereof, the scientific question presented must necessarily be determined by testimony of skilled and professional persons.^[13] The reliability of an expert's methods, in this context, involves medical science and its methods. In our case today, is the doctor's opinion on causation based upon medical science and method? A complete answer to this question, as we now explain, needs additional facts to be developed by the parties in the trial court.

¶ 21 Causation is now often divided into general causation and specific causation in some controversies involving allegations of injury resulting from a person's exposure to a harmful substance. General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether that substance caused the particular individual's injury.^[14] "General causation" is a relatively new expression, but actually the same concept as Wigmore's explanation of the probative value of evidence on the issue of causation when a thing possesses, under similar circumstances, a tendency or capacity to cause a similar effect elsewhere.^[15] What did our parties develop in the trial court on the issue of causation?

¶ 22 The doctor stated that Plaintiffs' injuries resulted from inhalation of certain types of chemicals, and that lime is such a chemical. The trial court order states that the doctor "does not know of any studies linking lime exposure with respiratory impairment." This language in the trial court's order links showing general causation with certain types of published studies, i.e., studies specifically on lime. Studies on lime in similar circumstances would be beneficial to show causation; however, we find nothing in the record stating that this is only method of showing causation. Defendants' focus on the absence of studies of airborne lime in the doctor's testimony fails to provide for the *possibility* that lime has certain physical properties that are shared with other chemical substances that have been subjected to studies, and that this method was used by the doctor to reach his conclusion. The doctor's testimony on causation discussed types of chemicals and included lime. However, no testimony of the doctor is before us showing how the doctor linked lime to other chemicals and the specific injury of Plaintiffs. Plaintiffs failed to state, by published studies or otherwise, the nature of similarity between lime and other chemicals relevant to causation. Plaintiffs did not try to link the degree of the toxicity of lime with scientific or medical evidence to show how lime, as an alleged toxic substance, could have caused the particular injury. In other words, Plaintiffs did not try to identify a mechanism by which their alleged chemical exposure led to the putative effect. Thus, we are not called upon in this controversy to decide what types of scientific reasoning or methods are acceptable for showing legal causation.^[16]

¶ 23 Our Evidence Code points to the respective burdens of parties when admissibility of evidence is challenged.

§ 2104. Rulings on Evidence

A. Error may not be predicated upon a ruling which admits or excludes evidence unless a substantial right of a party is affected, and:

1. If the ruling is one admitting evidence, a timely objection or motion to strike appears of record, stating the specific ground of objection, if the specific ground was not apparent from the context; or

2. If the ruling is one excluding evidence, the substance of the evidence was made known to the judge by offer or was

apparent from the context within which questions were asked.

12 O.S.2001 § 2104(A), emphasis added.

In one context we have said that the burden of showing that a statement offered in evidence is admissible is upon the party offering it. Wofford v. Lewis, 1962 OK 265, 377 P.2d 37, 41. One federal court has stated that the proponent of an expert's testimony bears the burden of satisfying the test for the admissibility of the evidence. "The proponent need not prove that the expert's testimony is correct, but she must prove by a preponderance of the evidence that the testimony is reliable." Moore v. Ashland Chem., Inc., 151 F.3d 269, 276 (5th Cir.1998, en banc), cert. denied, 526 U.S. 1064, 119 S.Ct. 1454, 143 L.Ed.2d 541 (1999). When a party challenges the admissibility of expert testimony by stating the specific ground of the objection, the proponent of the evidence must make known the substance of the proposed testimony that pertains to the objection. 12 O.S. § 2104; Wofford v. Lewis, supra. In our case today, we conclude that upon Defendants' specific challenge to Plaintiffs' expert on the basis of general causation, Plaintiffs had a burden of either showing general causation or showing that general causation is not necessary for the admissibility of the expert's testimony.

¶ 24 The Kansas Supreme Court has concluded that some cases are not appropriate for imposing a general causation requirement. Kuhn v. Sandoz Pharmaceuticals Corp., 270 Kan. 443, 14 P.3d 1170 (2000). That court stated the following.

We do not foreclose, by our holding here, that a future case with appropriate facts may require a finding of general and special causation. However, the facts here distinguish this case from cases that have employed a general causation requirement. First, general causation requirements (requiring plaintiffs to present confirming epidemiological evidence to make out a prima facie case) have typically been applied in cases involving mass exposures:

"Cases that have not imposed this requirement [general causation] typically involve injuries that may be placed in the 'sporadic accident model of tort law.' In [these] cases, where only a single plaintiff or a few plaintiffs have allegedly suffered an injury due to some exposure, a medical doctor will be permitted to render an opinion as to whether the exposure caused the plaintiff's injury solely on an examination of the plaintiff and a differential diagnosis of the source of the plaintiff's injury, sometimes supplemented with toxicological evidence...."

"In many of these cases there is relatively little epidemiological data available and the courts are reluctant to burden 'first plaintiffs' with the task of using epidemiology to prove general causation." 2 Faigman, Keye, Saks & Sanders, *Modern Scientific Evidence: The Law and Science of Expert Testimony: The Role of Epidemiological Evidence in Toxic Tort Cases*. § 28-1.3.2, pp. 307-08 (Citing Boston, *A Mass Exposure Model of Toxic Causation: The Content of Scientific Proof and the Regulatory Experience*, 18 Colum.J.Env'tl. L. 181, 188 [1993].)

The scope of plaintiffs' case here does not approach that of mass tort litigation.

604 *604 In addition, general causation requirements are usually imposed in cases with large existing epidemiological records. Richardson v. Richardson-Merrell, Inc., 857 F.2d 823, 832 (D.C.Cir.1988). See also Earl v. Cryovac, 115 Idaho 1087, 1095, 772 P.2d 725 (1989) (pulmonary disease allegedly caused by exposure to fumes from plastic film used in meat packing room; summary judgment for defendant reversed; "plaintiff's claim in a toxic tort case does not fail merely because the circumstantial evidence and the expert opinions are unsupported by animal or epidemiological studies confirming the existence of a cause-and-effect relationship").

Kuhn v. Sandoz Pharmaceuticals Corp., 14 P.3d at 1184-1185.

The Kansas court examined whether the alleged exposure was in a circumstance involving a "mass exposure" or a "sporadic accident model of tort law" involving a single plaintiff or a few plaintiffs. That court also discussed whether epidemiological^[17] data was available, and the reluctance of courts to burden "first plaintiffs" with the task of using epidemiology to prove general causation.

¶ 25 The trial court record before us does not show any argument specifically identifying the issues of general causation, specific causation, nor application of each to this controversy. Further, although the brief of Defendants raises the issue, there is no discussion of why its application to lime is appropriate either as an issue of fact or law. The Kansas court discussed the application of a general causation requirement as dependent upon certain facts. In this extraordinary writ proceeding we do not have a complete record of facts relating to this controversy.

¶ 26 Not all courts have agreed that *Daubert* requires the same type of methodology for general causation in all circumstances. See, e.g., *Heller v. Shaw Industries, Inc.*, 167 F.3d 146 (3d Cir.1999). We conclude that general causation should be shown unless the particular controversy is inappropriate for general causation. We decline to list hypothetical controversies where general causation need not be shown. We thus decline to make a first-instance assessment of the application of general causation to this controversy in the absence of the parties having developed the issue in the trial court. We do note that *Heller* discusses a strong temporal relationship and a person being "doused" by a substance. *Id.* 167 F.3d at 154. These are facts specific to the exposure of a particular individual and are thus usually presented in the context of specific causation.

¶ 27 What have the courts had to say about specific causation? Two issues often discussed are (1) the appropriateness of a differential diagnosis, and (2) the temporal, or time-based, relationship between the exposure and a plaintiff's injury.

¶ 28 "Differential diagnosis, or differential etiology, is a standard scientific technique which identifies the cause of a medical problem by eliminating the likely causes until the most probable one is isolated.... A reliable differential diagnosis typically is performed after 'physical examinations, the taking of medical histories, and the review of clinical tests, including laboratory tests,' and generally is accomplished by determining *605 the possible causes for the patient's symptoms and then eliminating each of these potential causes until reaching one that cannot be ruled out, or determining which of those that cannot be excluded is the most likely." *Maistrini v. One Hour Martinizing Dry Cleaning*, 180 F.Supp.2d 584, 609 (D.N.J.2002), (citation omitted). Courts have not been uniform in applying *Daubert* when assessing the methodology of clinical medicine to prove causation.^[18] In *Hollander v. Sandoz Pharmaceuticals Corp.*, 289 F.3d 1193 (10th Cir.2002), the Tenth Circuit declined to decide, in general terms, the reliability of differential diagnoses and case reports. However, it then stated that where differential diagnosis is used to show specific causation the party has also provided "independently reliable evidence that the allegedly dangerous drug or substance had harmful effects;" i.e., general causation was also shown. *Id.* 289 F.3d at 1210-1211.

¶ 29 In Oklahoma a physician treating a patient may use a medical history provided by the patient when making an opinion on causation of the patient's injury. In *Sneed v. Beaverson*, 1964 OK 191, 395 P.2d 414, 416, we said that "it was incumbent upon the trial court to consider the history plaintiff had given doctor, as correct" when the trial court ruled on defendant's demurrer to plaintiff's evidence. In *Chicago, R.I. & P. Ry. Co. v. Jackson*, 1917 OK 45, 63 Okla. 32, 162 P. 823, we said that:

... [T]he correct rule, it would appear, should permit a physician to testify to a statement or narrative given him by his patient in relation to his condition, symptoms, sensations, and feelings, both past and present, when made in connection with his own opinion as to the cause of the injury, though the statement may not be received as independent evidence to establish the fact of the injury.

Id. 162 P. at 826.

A physician using a patient's history is part of a method to determine causation of an injury. See *A & A Checker Cab Operating Co. v. Fritzshall*, 1953 OK 321, ¶ 14, 264 P.2d 322, 324, quoting, *Danner v. Chandler*, 1951 OK 246, 205 Okla. 185, 236 P.2d 503.

¶ 30 The trial court order before us today does not refer to the medical history of one of the Plaintiffs, or their testimony, or the report on the substance found at the arena. The doctor testified that he relied upon a medical history of one of the Plaintiffs. Plaintiff said that he saw things falling from the ceiling "like a cloud" and the doctor based his opinion upon this history and the time-based relationship between Plaintiffs' presence at the circus and the onset of symptoms. The trial court agreed with Defendants that Plaintiffs' expert was required to show both the quantity of airborne lime necessary to

cause injury (general causation) and the actual amount of airborne lime present (specific causation) the day Plaintiff attended the circus. The trial court made no specific findings on whether the doctor's method of using the medical history, testimony of plaintiff, and report of the other expert was a proper method for determining medical causation.

¶ 31 Not all courts have agreed that *Daubert* requires the expert to actually measure the substance in the air before testifying on causation. For example, in *Harris v. Peridot Chemical (New Jersey), Inc.*, 313 N.J.Super. 257, 712 A.2d 1181 (App.Div.1998), that court explained that when a expert showed a defect in equipment causing a release of the toxic substances, and that plaintiffs' injuries were consistent with exposure to the substances, the opinion testimony on causation was "based on a sound, adequately-founded scientific methodology involving data and information of the type reasonably relied on by experts in the scientific field." Id. 712 A.2d at 1201.

606 ¶ 32 Further, Defendants' argument herein requiring an actual measurement of the airborne lime at the time of the circus results in an approach that would prevent many lawsuits based upon a single-event exposure, such as, for example, when a plaintiff brings an action and testifies of being enveloped by a great cloud of noxious gas from a calamitous event occurring in the absence of an expert. See, e.g., *Louisville and Nashville R. Co. v. Hickman*, 445 So.2d 1023 (Fla. 1st DCA 1983), (plaintiff testified that upon being enveloped with gas he could neither see or breathe, and lung injury resulted from breathing poisonous gases after the derailment of a train caused the release of the gas). Consistent with this approach is our language in *Martin v. Stratton*, 1973 OK 124, 515 P.2d 1366, where we said that "evidence of instantaneous onset of injury following a certain occurrence and expert testimony that the injury could have been caused by the occurrence is sufficient to submit the question of causation to the jury even though there is evidence of other possible causes." *Martin v. Stratton*, 515 P.2d at 1371.

¶ 33 We do not agree, upon this record, that actual measurement of the airborne particles at the circus was necessary for the toxic exposure case. On the other hand, we can not state upon this record, what other particular method would be appropriate for the particular substance in this case. The methods of quantifying this particular substance and the relationship between quantity of substance and onset of injury must be addressed in the trial court by the parties.

¶ 34 A plaintiff may testify that he or she was overcome by gas or fumes that are felt, seen, or smelled by the plaintiff. For example, in *Mid-Continent Petroleum Corp. v. Epley*, 1952 OK 204, 207 Okla. 577, 250 P.2d 861, the plaintiff testified that she was injured from inhaling carbon monoxide gas and natural gas when, while she slept, the defendant turned off the natural gas supply to her house and then, without notification to her, turned it on again. The doctor testified that plaintiff's injuries were consistent with inhalation of carbon monoxide and "when the conditions under which she inhaled the gas, as testified to by her, were outlined to him he testified unhesitatingly that her condition was due to the inhaling of the gas." Id. 250 P.2d at 863. Defendants countered claiming that the gas was not dangerous, could not have been inhaled in sufficient quantities to cause the injuries complained of, that her trouble could have been produced by influenza, and that the symptoms described by her indicated that her condition was not caused by inhaling the gas. Id. 250 P.2d at 864. At some point after the event an expert for plaintiff examined the chemical composition of the gas piped into plaintiff's residence. We affirmed the judgment against the defendants. *Mid-Continent*, to the extent that it allows certain types of facts from a non-expert to establish causation in part, is consistent with *Boxberger v. Martin*, 1976 OK 78, 552 P.2d 370, 373-374, where we explained that in some circumstances causation may be established in the absence of expert medical testimony.

¶ 35 This action today is based upon the allegation that exposure of Plaintiffs to a particular substance caused injuries. This means that a plaintiff must show such exposure and that such exposure caused the injury. One court has stated that "A widely accepted toxicological methodology for determining the possible effects of a toxin on humans requires: "[F]irst[,] that the expert determine the dosage of the toxin at issue to which the plaintiff was exposed...." *Plourde v. Gladstone*, 190 F.Supp.2d 708, 721 (D.Vt. 2002). The method for determining the level of the toxin present in the environment may vary, and may include, when appropriate, the observations of those non-experts present when the exposure occurs. The dosage of the toxin necessary to cause injury may be relatively small, but some fact as to the dosage necessary for causing injury must usually be included by the expert when making an opinion on general causation. Plaintiffs' expert in the case before us today failed to specifically explain a method for determining the amount of lime that could result in injury, and failed to explain a method (whether by direct observations of others or otherwise) for an opinion that the lime present was in sufficient quantities to cause Plaintiffs' injuries in this case.

¶ 36 The sufficiency of an expert's evidence to support a conclusion is distinct from the reliability of the method used by the expert. *607 However, the U.S. Supreme Court has not maintained a sharp distinction between the reliability of an expert's methods and conclusions. That Court has allowed courts to determine the validity of an expert's conclusion. In General Electric Co. v. Joiner, 522 U.S. 136, 146, 118 S.Ct. 512, 519, 139 L.Ed.2d 508, 519 (1997) the Court said the following.

But conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered. See Turpin v. Merrell Dow Pharmaceuticals, Inc., 959 F.2d 1349, 1360 (C.A.6), cert. denied, 506 U.S. 826, 113 S.Ct. 84, 121 L.Ed.2d 47 (1992). That is what the District Court did here, and we hold that it did not abuse its discretion in so doing.

General Electric Co. v. Joiner, 522 U.S. at 146, 118 S.Ct. 512, emphasis added.

An expert's opinion on causation must be more than *ipse dixit*.^[19] As we noted above, "under the Rules the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but must be 'scientific' and reliable." Daubert, 509 U.S. 579, at 589, 113 S.Ct. 2786. Thus, when a expert's opinion relates to causation, reliability of that opinion is provided when the expert's opinion is based upon a reliable method for determining causation and the conclusion is analytically appropriate to that method. The reliability of the method is not shown merely because the expert states that causation exists.^[20]

¶ 37 At the trial court hearing Plaintiffs focused upon what the doctor did know, e.g., spirometry, medical history, symptoms, etc., and the conclusion of the doctor. Defendants focused on what the doctor did not know, such as quantity of airborne lime, if any, at the time of the circus, published studies on airborne lime, and his opinion on possible alternative causes for Plaintiffs' symptoms. The trial court focused on what the doctor did not know and concluded from this that the doctor could not say with a reasonable degree of medical certainty whether Plaintiffs' exposure caused the injuries. The trial court statement is not completely clear whether the court is making a determination that the unknown facts are necessary as part of a proper method for determining toxic exposure, or that the expert's conclusion is analytically unsound based upon what he does know, or that the expert's opinion is not admissible for flaws in both method and conclusions. We construe the order as concluding that both method and conclusions were improper.

¶ 38 In summary on the issue of causation, assuming that the expert's method for his conclusions is novel and reliability cannot be taken for granted, we hold that if expert testimony is necessary to show cause of an injury from exposure to a toxin, the testimony of the expert should reveal a reliable method for determining the quantity of the toxin necessary to cause injuries of the type experienced by plaintiff (general causation), unless plaintiff can show that the circumstances are such that general causation should not be necessary. See, e.g., Kuhn v. Sandoz Pharmaceuticals Corp., *supra*. Further, the expert's conclusion must be analytically appropriate for the expert's method.

IV. Standard of Review

¶ 39 A *Daubert* challenge is primarily one to the reliability of expert evidence. *Daubert* provided a list, set out above, of four non-exhaustive factors for the trial judge to consider when determining the admissibility of *608 evidence. The trial court order does not expressly address whether any of these four factors, or any other factor, is relevant to a method for showing causation for this particular alleged injury.

¶ 40 Generally, an adjudication determining the proper legal procedure for a particular controversy presents an issue of law, and is reviewed by a non-deferential *de novo* standard. In re A.M., 2000 OK 82, ¶ 6, 13 P.3d 484, 487. The question as to whether a *Daubert* procedure applies we answer in the affirmative, and thus agree with the trial court's reliance upon *Daubert*. But in addition to disputing whether *Daubert* applies, the parties disagree as to what must be shown to satisfy *Daubert*. This involves two determinations by the trial court: 1. What method is required by *Daubert* for this type of

controversy, and (2) Is the conclusion on causation made by a plaintiff's expert supported by the method that expert used? Application of a standard of review to these determinations requires us to distinguish fact from law and whether cause in fact is determined as an issue of fact or as an issue of law.

¶ 41 An issue of law decided by a trial court is reviewed by this Court *de novo*. *Brown v. Nicholson*, 1997 OK 32, n. 1, 935 P.2d 319, 321; *Kluver v. Weatherford Hosp. Auth.*, 1993 OK 85, 859 P.2d 1081, 1083. On the other hand, an adjudication of a fact by a lower tribunal is reviewed by different standards according to the type of controversy and type of adjudication made. For example, trial by jury in an action at law results in appellate court deference to the jury's determination of fact. *Sides v. John Cordes, Inc.*, 1999 OK 36, ¶ 17, 981 P.2d 301, 307. That deference takes the form of an appellate review based upon the presence of any competent evidence reasonably tending to support the verdict of the jury. *Barnes v. Oklahoma Farm Bureau Mut. Ins. Co.*, 2000 OK 55, ¶ 3, 11 P.3d 162, 166. In matters pertaining to the admission and exclusion of evidence we review both issues of fact and law under the rubric of a clear abuse of discretion standard, and our deference to the lower tribunal occurs in how we view the facts.

¶ 42 First, the clear abuse of discretion appellate standard applies when we review a decision on the admissibility of expert testimony. In the context of a ruling on the relevance of proffered evidence we have said that "a judgment will not be reversed based on a trial judge's ruling to admit or exclude evidence absent a clear abuse of discretion." *Myers v. Missouri Pacific R. Co.*, 2002 OK 60, ¶ 36, 52 P.3d 1014, 1033. We have applied this standard to an expert witness. *Gabus v. Harvey*, 1984 OK 4, 678 P.2d 253, 258. In *Cities Service Co. v. Gulf Oil Corp.*, 1999 OK 14, ¶ 32, 980 P.2d 116, 132, we applied this standard to an expert witness, and relied upon the U.S. Supreme Court opinion that applied the abuse of discretion standard to *Daubert* rulings. *Cities Service Co. v. Gulf Oil Corp.*, at ¶ 32, 980 P.2d at 132, citing, *General Elec. Co. v. Joiner*, 522 U.S. 136, 118 S.Ct. 512, 139 L.Ed.2d 508 (1997). The Court of Criminal Appeals uses the standard of clear abuse of discretion for reviewing a *Daubert* decision. *Gilson v. State*, 2000 OK CR 14, n. 5, 8 P.3d 883, 908.

¶ 43 Secondly, a clear abuse of discretion standard includes appellate review of both fact and law issues: "In order to determine whether there was an abuse of discretion, a review of the facts and the law is essential." *Board of Regents of University of Oklahoma v. National Collegiate Athletic Association*, 1977 OK 17, 561 P.2d 499, 502. An abuse of discretion occurs when a court bases its decision on an erroneous conclusion of law or where there is no rational basis in evidence for the ruling. *Fent v. Oklahoma Natural Gas Co.*, 2001 OK 35, ¶ 12, 27 P.3d 477, 481. When applying the abuse of discretion standard the trial court's "Order will be reversed if the trial court is deemed to have erred with respect to a pure, simple and unmixed question of law." *Jones, Givens, Gotcher & Bogan, P.C. v. Berger*, 2002 OK 31, ¶ 5, 46 P.3d 698, 701. A *de novo* standard applies when the error is one of law. *Scoufos v. State Farm Fire and Cas. Co.*, 2001 OK 113, ¶ 1, 41 P.3d 366, 367. (although order was reviewed for abuse of discretion, *de novo* standard applies to issue of whether the court applied the correct legal standard).

609 *609 ¶ 44 Abuse of discretion review may also include a review of facts (evidence). "An abused judicial discretion is manifested when discretion is exercised to an end or purpose not justified by, and clearly against, reason and evidence. It is discretion employed on untenable grounds or for untenable reasons, or a discretionary act which is manifestly unreasonable." *Patel v. OMH Medical Center, Inc.*, 1999 OK 33, ¶ 20, 987 P.2d 1185, 1194, note omitted. See also, *Ware v. Beach*, 1957 OK 166, 322 P.2d 635, 642, (abuse of judicial discretion which may be corrected on appeal is a discretion exercised to an end or purpose not justified by, and clearly against, reason and evidence). An adjudication of an issue of fact by the trial court must be based upon evidence that supports the decision. We have said that a trial court abuses its discretion in granting relief when no evidence exists in the record for granting such relief. *Pickett v. Chicago, R.I. & P. Ry. Co.*, 1934 OK 487, 169 Okla. 123, 36 P.2d 284, 286. We have said that an entire absence of proof on an element to a claim will result in a directed verdict, *Computer Publications, Inc. v. Welton*, 2002 OK 50, ¶ 6, 49 P.3d 732, 735, and that adjudication is reviewed using a *de novo* standard. *Cities Service Co. v. Gulf Oil Corp.*, 1999 OK 14, 980 P.2d 116, 124. A trial court determination that no fact exists of record to support the issue of fact submitted for resolution is a determination of an issue of law and requires a *de novo* review.^[21] Thus, a trial court determination that no fact exists in the trial court record, i.e., a complete absence of proof, to support the reliability of a particular expert for the purpose of admission of that expert's opinion presents an issue for *de novo* review.

¶ 45 When we speak of the discretion of the trial judge we do not mean that the decision of the trial judge is one without

fixed principles by which its correctness may be determined upon appellate review. See Hofer, *Standards of Review—Looking Beyond The Labels*, 74 Marq. L.Rev. 231, 246-247 (1991), (application of some discretion-based standards are sufficiently open-ended so as to allow more than one "correct" decision upon the same set of facts). It is certainly true that pursuant to *Daubert* a trial judge possesses the discretion to determine, based upon facts presented to the trial court, that a factor, other than one of the four *Daubert* factors, is appropriate to measure the reliability of a particular expert witness. But the exercise of discretion making that determination must be based upon a fact of record showing that reliability is predicated upon the presence of that factor used by the trial court. Further, when reliability turns on an issue of law, as we explain below, a trial court is not free to ignore relevant and binding precedent on that issue. Issues of fact and law decided by the exercise of the judge's discretion are subject to appellate review.

¶ 46 The trial judge is called upon to decide issues of fact. The four non-exhaustive *Daubert* factors: (1) Can, or has, the expert's method been tested; (2) Has the expert's method been subjected to peer review and publication, (3) Is there a known or potential rate of error and the existence of standards controlling the method, and (4) Is there widespread acceptance of the method within the relevant community of experts— all involve determination of facts. A trial court's determination of those facts is subject to appellate review—is the determination against reason and evidence—is it an abuse of discretion? The trial court record before us is not specific on application of these *Daubert* factors or other factors determined by the trial court to be appropriate for Plaintiffs' expert.

610 ¶ 47 In *State ex rel. Burk v. City of Oklahoma City*, 1979 OK 115, 598 P.2d 659, 663, we stated that because our appellate review used an abuse of discretion standard, *610 the trial court should set forth with specificity those facts found and used to support the court's order. When a trial court applies *Daubert* and determines that a particular method is required for the admissibility of a particular expert's conclusions the order should state those facts that the trial court relied upon in making that determination.

¶ 48 In our case today the *Daubert* issue was raised by motions *in limine*.^[22] *Daubert* challenges to evidence are routinely raised by a motion in *limine*, and may also require an evidentiary hearing, or "*Daubert* hearing," to properly inform the trial judge. The Tenth Circuit federal court has stated that federal courts may decide whether a *Daubert* challenge is decided upon special briefing or some other procedure, and has further explained that a common method is a *Daubert* hearing, although such a hearing is not specifically mandated. *U.S. v. Turner*, 285 F.3d 909, 912-913 (10th Cir.2002), *cert. denied*, ___ U.S. ___, 123 S.Ct. 180, 154 L.Ed.2d 163 (2002), *quoting*, *Goebel v. Denver & Rio Grande W. R.R. Co.*, 215 F.3d 1083, 1087 (10th Cir.2000). As explained by one group of authors, "Decisions about admissibility under all three rules [Federal Rules 403, 702, and 703] hinge on factual issues that can be resolved meaningfully only if a court is adequately informed." *Expert Evidence: A Practitioner's Guide to Law, Science, and the FJC Manual*, 29 (B. Black, P. Lee ed.1997). A procedure creating a record of facts, whether by formal hearing with an opportunity for cross-examination, or argument on special briefs with attached documents and admitted facts of what the evidence will show, "creates a record that allows a judge to rule on admissibility after due consideration." *Expert Evidence, supra*, at 29-30.

¶ 49 In our case today, the trial court attempted to apply *Daubert*, and one stated reason for the trial court rejecting the expert's conclusion was because the expert did not possess "baseline data" of Plaintiffs' pulmonary functions prior to Plaintiffs' exposure at the circus. The requirement of baseline data was put forward by argument of counsel for Defendant and adopted by the trial court. Is possession of "baseline data" required by the relevant community of experts in order to make a conclusion such as that made by a plaintiff's expert? Here, Plaintiffs' expert stated that a pre-circus spirometry "would be very helpful," but he did not testify that it was necessary for his conclusion. If that type of medical test is considered necessary by the relevant experts for the conclusion on causation made by a plaintiff's expert, then the evidence presented should reflect such and the order should state such finding of fact.

¶ 50 On the other hand, trial courts may determine that a particular fact is necessary to show causation and the ruling presents a question of law. In *McKellips v. Saint Francis Hosp., Inc.*, 1987 OK 69, 741 P.2d 467, we said the following:

Proximate cause consists of two elements: cause in fact and legal causation. Legal causation concerns a determination whether legal liability should be imposed as a matter of law where cause in fact is established and depends upon considerations of common sense and policy. Cause in fact, on the other

hand, deals with the "but for" consequences of an act. "The defendant's conduct is a cause of the event if the event would not have occurred but for that conduct." The present matter involves only the question whether appellees or the decedent's underlying condition was the real cause—cause in fact—of his death. Therefore, our opinion does not deal with the scope of proximate cause involved in the concept of legal causation. Generally, the question of cause in fact is for the jury. It is only when there is no evidence from which the jury could reasonably find a causal nexus between the negligent act and the resulting injury it becomes a question of law for the court.

611 *611 The sufficiency of the evidence to show cause in fact presents a question of law for the court. Sufficiency of evidence is the "legal standard which is applied to determine whether the case may go to the jury." A plaintiff's burden of proof of causation is twofold. First, a plaintiff has the burden of producing evidence, satisfactory to the judge, that a reasonable person could believe in the existence of the causal link and that the evidence should be weighed by the jury. A verdict will be directed for the defendant if a plaintiff fails to carry this burden. Secondly, a plaintiff bears the burden of persuasion should the evidence be allowed to reach the jury. The standard for sufficiency of proof of evidence, related to a plaintiff's first burden, should not be confused with the standard of proof, associated with a plaintiff's second burden, which is applied by the jury in reaching a final verdict. Generally, in civil cases the standard of proof means a preponderance of the evidence. The certified questions concern the burden of production and sufficiency of proof of causation standard as to whether the causation issue should be submitted to the jury.

McKellips v. Saint Francis Hosp., Inc., ¶¶ 9-10, 741 P.2d at 470-471, notes omitted.

When a trial court determines that the facts are insufficient to show cause in fact because a reasonable person could not believe in the existence of the causal link between the injury and facts relating to a defendant's conduct, then the trial court is deciding an issue of law, i.e., what a reasonable person believes, and a *de novo* standard will apply. Here the trial court listed several facts that the expert did not know, and then concluded that the expert did not show causation, and that his testimony was thus inadmissible. The conclusion of the trial court, although not expressly stated as such, was a legal determination—a conclusion that the facts were insufficient to show cause in fact to a reasonable person. This concept is not new. Trial courts frequently determine causation issues in the context of motions for directed verdicts, and we review those using a *de novo* standard.^[23]

¶ 51 In Weisgram v. Marley Co., 528 U.S. 440, 120 S.Ct. 1011, 145 L.Ed.2d 958 (2000), the Court made the following comment

Inadmissible evidence contributes nothing to a "legally sufficient evidentiary basis." See Brooke Group Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 242, 113 S.Ct. 2578, 125 L.Ed.2d 168 (1993) ("When an expert opinion is not supported by sufficient facts to validate it in the eyes of the law, or when indisputable record facts contradict or otherwise render the opinion unreasonable, it cannot support a jury's verdict.").

Weisgram v. Marley Co., 528 U.S. at 454, 120 S.Ct. 1011, emphasis added.

In sum, an expert opinion may be not supported by sufficient facts for legal validation because of at least one of two reasons, (1) It is without, or not based upon, facts necessary for the method or technique used by the expert, or (2) The facts do not support the conclusion of the expert. The abuse of discretion standard applies when reviewing both reasons, and that standard requires us to determine whether a trial court is determining a fact or an issue of law. Once we identify whether fact or law has been adjudicated by the trial court, we then must determine if a deferential or a non-deferential *de novo* review applies to the particular adjudication of fact, and to an issue of law we apply a non-deferential *de novo* standard.

¶ 52 Defendant argues that the trial court order should not be disturbed absent an abuse of a discretion. We agree with that standard, but not with the application of Defendant. The trial court stated that it was applying *Daubert*, but it abused its discretion, on this record, in making a determination that a base-line (pre-injury) pulmonary function study, such as a

612 spirometry, was *612 necessary to show cause in fact of an alleged pulmonary injury from airborne lime at the circus. No fact was before the trial court showing that such test was considered to be necessary by the relevant community of experts, or by satisfaction of any of the other *Daubert* factors. We have said that a trial court commits an abuse of discretion when it decides an issue based upon a fact not of record. *Pickett v. Chicago, R.I. & P. Ry. Co., supra*. Further, to the extent that the trial court made a determination of the necessity of a base-line study to support the expert's conclusion, as a matter of law, i.e., that a reasonable person could not believe in the existence of the causal link in the absence of such study, we review that determination *de novo*, and note that no legal authority is cited by Defendants in support of the necessity of a base-line (pre-injury) medical study to show cause in fact of a medical injury.

V. Conclusion

¶ 53 We conclude that Oklahoma courts should apply *Daubert* and *Kumho* as we have applied them here when determining the admissibility of an expert's opinion. Plaintiffs in this case must be allowed an opportunity to make the required showing pursuant to *Daubert*, and Defendants an opportunity to challenge that testimony, according to the standards we have now articulated.

¶ 54 The trial court did not determine that the methods of Plaintiffs' expert were insufficient pursuant to one of the particular *Daubert* factors, or some other factor determined to be appropriate in applying *Daubert*. The trial court challenged the expert's conclusion, but did not specifically link a deficient conclusion with either a faulty method or an exercise of *ipse dixit* by the expert. We hereby issue a writ of prohibition and the order of the trial court shall not be enforced. However, we do not determine that the testimony of Plaintiffs' witness satisfies *Daubert*. We stated herein that upon Defendants' specific challenge to Plaintiffs' expert on the basis of general causation, Plaintiffs had a burden of either showing general causation or showing that general causation is not necessary for the admissibility of the particular expert's testimony. Plaintiffs have this opportunity upon conclusion of this proceeding.

¶ 55 Application of the standard of review in this Court requires identifying whether the trial court made determinations of fact or law, and our opinion provides an example where the trial court abused its discretion upon the record now before us. The parties have a responsibility of framing the issues for the trial court and identifying controverted issues as either fact or law. Whether the trial court abused its discretion in other particulars we need not address, because the issue of the admissibility of the testimony by Plaintiffs' expert is left open for further proceedings in the trial court. In sum, the writ is issued and the order shall not be enforced, but the parties may now litigate the admissibility of the expert testimony based upon the *Daubert* criteria as we have explained herein.

¶ 56 WATT, C.J., HODGES, LAVENDER, KAUGER, BOUDREAU and WINCHESTER, JJ., concur.

¶ 57 OPALA, V.C.J., concurs in part, dissents in part.

¶ 58 HARGRAVE, J., dissents.

[1] In *Cities Service Co. v. Gulf Oil Corp.*, 1999 OK 14, ¶ 32, 980 P.2d 116, 132, we cited *Daubert* for the proposition that a trial judge has the role of a gatekeeper to screen evidence by determining its relevance and reliability. *Id.* at n. 68. We did not address the *Daubert* standard.

[2] One writer has stated that forty-six states have adopted Rule 702, thirty-three states have adopted *Daubert*, and several have not yet considered whether to adopt *Daubert*. See Note, *The Movement From Frye to Daubert: Where Do the States Stand?*, 38 *Jurimetrics J.* 201, 208-09 (1998).

In addition to the Oklahoma Court of Criminal Appeals, we have found courts in eighteen states that currently have adopted *Daubert*. See, e.g., *Turner v. State*, 746 So.2d 355, 358-360 (Ala. 1998); *State v. Coon*, 974 P.2d 386, 389-391 (Alaska 1999); *Farm Bureau Mut. Ins. Co. of Ark., Inc. v. Foote*, 341 Ark. 105, 14 S.W.3d 512, 519-520 (2000); *State v. Porter*, 241 Conn. 57, 698 A.2d 739 (1997); *M.G. Bancorp., Inc. v. Le Beau*, 737 A.2d 513, 522 (Del.1999); *Rogers v. Commonwealth*, 86 S.W.3d 29, 42 (Ky.2002); *Independent Fire Ins. Co. v. Sunbeam Corp.*, 1999-2181, 755 So.2d 226, 235 (La.2000); *State v. Cline*, (1996), 275 Mont. 46, 909 P.2d 1171, 1177; *Schafersman v. Aqland Coop*, 262 Neb. 215, 631 N.W.2d 862, 876-877 (2001); *State v. Alberico*, 116 N.M. 156, 861 P.2d 192, 203 (1993); *State v. Goode*, 341 N.C. 513, 461 S.E.2d 631, 639 (1995); *State v. Sampson*, 167 Or.App. 489, 6 P.3d 543, 551 n. 9, *rev. den.*,

331 Or. 361, 19 P.3d 354 (2000), Raimbeault v. Takeuchi Mfg. (U.S.), Ltd., 772 A.2d 1056, 1061 (R.I.2001); Boomsma v. Dakota, Minnesota & Eastern R.R. Corp., 2002 SD 106, 651 N.W.2d 238, 247, citing, State v. Hofer, 512 N.W.2d 482, 484 (S.D.1994); E.I. duPont de Nemours and Co. v. Robinson, 923 S.W.2d 549, 556 (Tex.1995); State v. Streich, 163 Vt. 331, 658 A.2d 38, 46 (1995); Wilt v. Buracker, 191 W.Va. 39, 443 S.E.2d 196 (1993), cert. denied, 511 U.S. 1129, 114 S.Ct. 2137, 128 L.Ed.2d 867 (1994); Bunting v. Jamieson, 984 P.2d 467 (Wyo.1999). New Hampshire recently adopted *Daubert* in Baker Valley Lumber, Inc. v. Ingersoll-Rand Co., 148 N.H. 609, 813 A.2d 409 (2002).

Courts in an additional eight states have stated that *Daubert* is instructive for application of the relevant state statute. State v. Vliet, 95 Hawai'i 94, 19 P.3d 42, 53 (2001), (Hawaii has neither accepted or rejected *Daubert*, but because the Hawaii statute is patterned on the federal rule construction of that rule by the federal courts is instructive); Hyppolite v. State, 774 N.E.2d 584, *601 (Ind.App.2002), ("although not binding upon the determination of the state evidentiary law issues, the federal evidence law of *Daubert* and its progeny is helpful to the bench and bar in applying the Indiana Rule of Evidence"); In re Detention of Holtz, 653 N.W.2d 613, 615-616 (Iowa App.2002), ("trial courts are not required to apply the analysis set forth in *Daubert* ... in considering the admission of expert testimony... [but] trial courts may find it helpful in complex cases to use one or more of the relevant *Daubert* considerations in assessing the reliability of expert testimony"), quoting, Leaf v. Goodyear Tire & Rubber Co., 590 N.W.2d 525, 532 (Iowa 1999), (adopting a limited application of *Daubert*); Commonwealth v. Lanigan, 419 Mass. 15, 641 N.E.2d 1342, 1349 (Mass.1994), (accepted the basic reasoning of *Daubert*); State v. Stevens, 78 S.W.3d 817, 832-834 (a trial court may consider the factors listed in *Daubert*) McDaniel v. CSX Transportation, Inc., 955 S.W.2d 257 (Tenn. 1997), (declined to expressly adopt, but allowed trial court to consider, *Daubert*). Courts in Ohio and Maine have used *Daubert*. Miller v. Bike Athletic Co., 80 Ohio St.3d 607, 687 N.E.2d 735, 741-742 (1998); State v. MacDonald, 718 A.2d 195, 198-199 (Me.1998). Colorado has cited to *Daubert* for the proposition that in application of Colorado's statute the evidence must be both reliable and relevant, and that a trial court may consider the factors listed in Daubert. People v. Shreck, 22 P.3d 68, 77 (Colo.2001).

Courts in seven states apply the *Frye* or a modified *Frye* test. Rickqauer v. Sarkar, 804 So.2d 502, 504 (Fla.App.2001), (Florida courts still apply the *Frye* test in determining the admissibility of scientific evidence, as the Florida Supreme Court has declined to apply *Daubert*); Goeb v. Tharaldson, 615 N.W.2d 800, 814 (Minn. 2000), (modified *Frye* standard used and *Daubert* rejected); Kansas City Southern Ry. Co., Inc. v. Johnson, 798 So.2d 374, 382 (Miss.2001), (uses *Frye* test and has not adopted *Daubert*); State v. Free, 351 N.J.Super. 203, 798 A.2d 83, 93 (App. Div.2002), (state jurisprudence is consistent with *Frye* and not *Daubert*); People v. Johnston, 273 A.D.2d 514, 709 N.Y.S.2d 230, 236, lv. denied, 95 N.Y.2d 935, 721 N.Y.S.2d 612, 744 N.E.2d 148 (Frye applied); State v. Copeland, 130 Wash.2d 244, 922 P.2d 1304, 1314-315 (1996), (*Frye* test applied and declined to adopt *Daubert*); Armstrong v. City of Wichita, 21 Kan.App.2d 750, 907 P.2d 923, 929 (1996), (*Daubert* not applied and *Frye* applied). An additional two state courts have declined to adopt *Daubert*. Carnell v. Barker Management, Inc., 137 Idaho 322, 48 P.3d 651, 656-657; Krause Inc. v. Little, 34 P.3d 566, 569 (Nev.2001).

Pennsylvania continues to apply the *Frye* test, Commonwealth, Dept. of General Services v. United States Mineral Products Co., 809 A.2d 1000, 1021 n. 5 (Pa.Cmwlth.2002), but it has not yet considered whether it should be replaced by *Daubert*. Commonwealth v. Davies, 811 A.2d 600, 604 n. 2 (Pa.Super.2002), citing, Commonwealth v. Crews, 536 Pa. 508, 640 A.2d 395, 400 n. 2 (1994).

Courts in Illinois, Missouri, and North Dakota have not yet considered the issue. Donaldson v. Central Illinois Public Service Co., 199 Ill.2d 63, 262 Ill.Dec. 854, 767 N.E.2d 314, n. 1, 325, (2002); Long v. Missouri Delta Medical Center, 33 S.W.3d 629, 643 (Mo.App.2001); Hamilton v. Oppen, 2002 N.D. 185, ¶ 20, n. 2, 653 N.W.2d 678, 685.

Utah uses a test similar to *Daubert*. State v. Crosby, 927 P.2d 638, 641-642 (Utah 1996). South Carolina applies neither a *Frye* or *Daubert* test. State v. Council, 335 S.C. 1, 515 S.E.2d 508, 517-518 (1999), cert. denied, 528 U.S. 1050, 120 S.Ct. 588, 145 L.Ed.2d 489 (1999). Georgia has not adopted the federal rule and *Daubert* has thus not been adopted. Norfolk Southern Railway Co. v. Baker, 237 Ga.App. 292, 514 S.E.2d 448, 451 (1999).

Arizona declined to adopt the *Daubert* test in Logerquist v. McVey, 196 Ariz. 470, 1 P.3d 113 (Ariz.2000). An Arizona appellate court has opined that *Logerquist* endorsed California's distinction between medical evidence and scientific evidence, and that a special rule for admissibility applied to the latter and not the former. State ex rel. Romley v. Fields, 201 Ariz. 321, 35 P.3d 82, 88 (Ariz.App.2001). California uses the *Kelly* test for admitting novel scientific evidence. People v. Soto, (1999) 21 Cal.4th 512, 88 Cal.Rptr.2d 34, 981 P.2d 958, n. 2, 960, 962, citing, People v. Kelly, (1976) 17 Cal.3d 24, 30, 130 Cal.Rptr. 144, 549 P.2d 1240.

[3] The relief selected upon recasting must be procedurally proper. City of Lawton v. International Union of Police Associations, Local 24, 2002 OK 1, ¶ 15, 41 P.3d 371, 377, (on post-appeal certiorari review of a decision by the Court of Civil Appeals an appeal could not be recast to a review of a certified interlocutory order). This court has recast a petition for certiorari to review a certified interlocutory order to a petition for writ of prohibition. Cleghorn v. Maples, 1994 OK 7, 867 P.2d 1272. This Court has reviewed trial court orders in the context of extraordinary relief when necessary to clarify district court procedure. See note 4 *infra*.

[4] When deciding to recast a proceeding we have considered whether the issue before us is one of first impression. S.W. v. Duncan, 2001 OK 39, ¶ 13, 24 P.3d 846. The concept of judicial economy is present in those procedures designed to prevent an appellate court

from hearing the same matter more than once. Patel v. OMH Medical Center, Inc., 1999 OK 33, ¶ 22, 987 P.2d 1185, 1195. Judicial economy does not serve as a sole reason for this Court to assume original jurisdiction. Keating v. Johnson, 1996 OK 61, n. 7, 918 P.2d 51, 57; Council on Judicial Complaints v. Maley, 1980 OK 32, 607 P.2d 1180, 1182. (judicial economy interests for assuming jurisdiction were not persuasive). We have assumed original jurisdiction to clarify a trial court procedure. Carman v. Fishel, 1966 OK 130, 418 P.2d 963, 968, *overruled on other grounds*, Tuller v. Shallcross, 1994 OK 133, 886 P.2d 481, 485. See also, Orthopedic Clinic v. Jennings, 1971 OK 16, 481 P.2d 139, 140, (new procedural questions were raised involving appeals and vacating judgments); Miears v. District Court of Oklahoma County, 1974 OK 18, 519 P.2d 485, (new court rule that resulted from a then recent opinion of the United States Supreme Court). Whether *Daubert* applies in civil proceedings is a new procedural question for Oklahoma courts statewide when applying our Evidence Code, and the question arises because of recent opinions of the U.S. Supreme Court.

[5] 12 O.S.2001 § 2702:

Testimony by Experts

If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education may testify in the form of an opinion or otherwise.

[6] 12 O.S.Supp.2002 § 2703:

Bases of Opinion Testimony by Experts

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence in order for the opinion or inference to be admitted.

[7] 12 O.S.2001 § 2704:

Opinion on Ultimate Issue

Testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact.

[8] 12 O.S.Supp.2002 § 2705:

Disclosure of Facts or Data Underlying Expert Opinion

An expert may testify in terms of opinion or inference and give reasons therefor without previous disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.

[9] The factor "widespread acceptance of the theory or technique within the relevant scientific community" is similar to *Frye*. *Frye* imposed a "general acceptance" test. Taylor v. State, 889 P.2d 319, 324 n. 13, 327-329 (Okla.Cr.1995). According to one court, *Daubert* in courts applying a "widespread acceptance" analysis allow admission of evidence that satisfies the more restrictive *Frye* test. State v. Kinney, 171 Vt. 239, 762 A.2d 833, 841 (2000).

[10] For example, in Gulf Oil Corp. v. Simmons, 1946 OK 317, 197 Okla. 677, 174 P.2d 359, we affirmed a judgment where the trial judge sustained objections to an expert's opinion on the value of cattle when nothing showed of record that the expert's opinion was based upon the proper criteria, i.e. the "material facts of age and breed" of the cattle. *Id.* 174 P.2d at 361. We have also reversed a judgment when an expert's testimony on an issue was not based upon a knowledge of the proper facts needed to determine the issue. See, e.g., Kappler v. Storm, 1915 OK 895, 153 P. 1142, 1143, (one reason for reversal was that the expert claimed experience from observation, but the extent of that observation was not shown, and he revealed no knowledge of those facts considered by courts when determining the particular issue before the court).

[11] See also State v. Moeller, 616 N.W.2d 424, 449, 2000 SD 122, ¶¶ 86-87, (*Daubert* hearing for expert's testimony was not needed because the challenged evidence did not present any new scientific theory, the methodologies were neither complex nor unusual, analysis was made by well-established method in the field, and there was no evidence in the record that expert's methodology or analysis was so skewed as to alter the otherwise reliable scientific method); Seivewright v. State, 7 P.3d 24, 30 (Wyo.2000), (because of the wide acceptance of bite mark identification testimony and defendant's failure to present evidence challenging the methodology, the trial court's failure to hold a *Daubert* hearing to analyze the expert's testimony was not an abuse of discretion). Cf. U.S. v. Havvard, 117 F.Supp.2d 848 (S.D.Ind.2000), (latent fingerprint identification satisfied the standards of reliability for admissible expert testimony).

[12] See McKye v. State Election Bd. of State of Oklahoma, 1995 OK 15, 890 P.2d 954, 956, (extraordinary proceeding is independent

action); Schofield v. Melton, 1933 OK 447, 166 Okla. 64, 25 P.2d 279, 282, (claims must be presented to the trial court before seeking prohibition); S.W. v. Duncan, 2001 OK 39, n. 14, 24 P.3d 846, 855, (the record in an original jurisdiction proceeding is usually in the form of an appendix supplied by each party).

[13] Matchen v. McGahey, 1969 OK 48, 455 P.2d 52, 57. See Ruland v. Zenith Const. Co., 1955 OK 132, 283 P.2d 540, 541, (the cause of a medical illness is a matter of medical science to be established by expert testimony); Boxberger v. Martin, 1976 OK 78, 552 P.2d 370, 373-374, (noting general rule and explaining exception that expert medical testimony is not required to establish the cause of an objective injury where there is competent evidence, without such testimony, to establish the cause with reasonable certainty).

[14] Amorqianos v. National R.R. Passenger Corp., 303 F.3d 256, 268 (2d Cir.2002); Neal v. Dow Agrosociences LLC, 74 S.W.3d 468, 472 (Tex.App.Dallas, 2002); Fulmore v. CSX Transp., Inc., 252 Ga.App. 884, 557 S.E.2d 64, 72 (2001), (stating definitions of general and specific causation).

[15] For example, an action to decide whether vibrations of factory machinery caused injury in a specific adjacent house involves the issue of whether the machinery has a tendency (probability) or capacity (possibility) to produce such an effect generally. J. Wigmore, *The Science of Judicial Proof*, § 135 (3d ed.1937). The tendency or capacity of a thing to produce, or cause, an effect of a given sort "is to be evidenced by instances of the same effect found attending the same thing elsewhere, these other instances have probative value to show such a tendency or capacity only so far as the conditions or circumstances in the other instances are similar to the case at hand." J. Wigmore, *The Science of Judicial Proof*, § 136 (3d ed.1937), emphasis in original. "The similarity that is required is, in short, a similarity in essential circumstances, or, as it is usually expressed, a substantial similarity, i.e., a similarity in such circumstances or conditions as might supposedly affect the result in question." *Id.*

[16] For example, The Federal Judicial Center, *Reference Manual on Scientific Evidence*, 422-423 (2d ed.2000), discusses showing causation by in vitro experiments, "theories of bioplausibility", deductive clinical reasoning "based on known facts about the toxic effects of a chemical", regulatory standards, etc. We decline to address the application of any of these theories in advance of the parties framing the issues.

[17] The term "epidemiology" has been defined as follows:

"Epidemiology is the field of public health and medicine that studies the incidence, distribution, and etiology of disease in human populations. The purpose of epidemiology is to better understand disease causation and to prevent disease in groups of individuals. Epidemiology assumes that disease is not distributed randomly in a group of individuals and that identifiable subgroups, including those exposed to certain agents, are at an increased risk of contracting particular diseases." Federal Judicial Center, *Reference Manual on Scientific Evidence*, 335 (2d ed.2000).

"Epidemiology is concerned with the incidence of disease in populations and does not address the question of cause of an individual's disease. This question, sometimes referred to as specific causation, is beyond the domain of the science of epidemiology. Epidemiology has its limits at the point where an inference is made that the relationship between an agent and a disease is causal (general causation) and where magnitude of excess risk attributed to the agent has been determined; that is, epidemiology addresses whether an agent can cause a disease, not whether an agent did cause a specific plaintiff's disease." Federal Judicial Center, *Reference Manual on Scientific Evidence*, 381-382 (2d ed.2000).

[18] Hollander, 289 F.3d at 1209-1210, comparing Westberry v. Gislaved Gummi AB, 178 F.3d 257, 262-66 (4th Cir.1999) and Glastetter v. Novartis Pharms. Corp., 252 F.3d 986, 989 (8th Cir.2001). See also Federal Judicial Center, *Reference Manual on Scientific Evidence*, 34-38 (2d ed.2000), comparing Moore v. Ashland Chemical Inc., 151 F.3d 269 (5th Cir.1998), cert. denied, 526 U.S. 1064, 119 S.Ct. 1454, 143 L.Ed.2d 541 (1999), and Heller v. Shaw Industries, Inc., 167 F.3d 146 (3rd Cir.1999).

[19] *ipse dixit*—"He himself said it; a bare assertion resting on the authority of an individual." *Black's Law Dictionary*, 961 (4th ed.1951).

[20] It has been said that "it is common that medical experts often disagree on diagnosis and causation, questions of conflicting evidence must be left for the jury's determination." Hose v. Chicago Northwestern Transp. Co., 70 F.3d 968, 976 (8th Cir.1995). We recognize that experts may disagree on the issue of causation when they use either similar or dissimilar methods for arriving at their conclusions in a particular case.

[21] In the context of summary judgment we have explained that a judicial determination that no material evidence exists in the trial court record to support a claim or defense is a determination of an issue of law that is reviewed *de novo*. Barker v. State Ins. Fund, 2001 OK 94, ¶ 7, 40 P.3d 463, 466. In Barker we also explained that a determination based upon no disputed facts is reviewed using a *de novo* standard. *Id.* at ¶ 7, 40 P.3d at 467. This principle is consistent with Lefthand v. City of Okmulgee, 1998 OK 97, ¶ 7, 968 P.2d 1224, 1226, where we said that a question of fact involving proximate cause becomes question of law when either the facts are undisputed or there is no evidence to support the causation element of the action.

[22] A motion *in limine* is a motion preliminary to trial, and advisory until finally determined at trial, to preclude the introduction of prejudicial matters to the jury. *Myers v. Missouri Pacific R. Co.*, 2002 OK 60, n. 66, 52 P.3d 1014, 1033, quoting, *Middlebrook v. Imler, Tenny & Kugler, M.D.'s, Inc.*, 1985 OK 66, ¶ 12, 713 P.2d 572, 579. The motion has been recognized by Oklahoma case law. *Messler v. Simmons Gun Specialties, Inc.*, 1984 OK 35, 687 P.2d 121, 127.

[23] A party's presentation of insufficient causation may be successfully challenged by a request for a directed verdict. *Gillham v. Lake Country Raceway*, 2001 OK 41, ¶ 5, 24 P.3d 858, 860. (directed verdict affirmed where causation not shown). A directed verdict should be granted when there exists an entire absence of proof on causation. *Computer Publications, Inc. v. Welton*, 2002 OK 50, ¶ 6, 49 P.3d 732, 735. Our standard of review for a directed verdict is *de novo*. *Cities Service Co. v. Gulf Oil Corp.*, 1999 OK 14, 980 P.2d 116, 124.

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