NO. 10-0775

In the Supreme Court of Texas

SUSAN ELAINE BOSTIC, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE HEIRS AND ESTATE OF TIMOTHY SHAWN BOSTIC, DECEASED; HELEN DONNAHOE; AND KYLE ANTHONY BOSTIC,
Petitioners,

v.

GEORGIA-PACIFIC CORPORATION,
Respondent

Petition for Review Arising From the Court of Appeals
For the Fifth Judicial District
Dallas, TX
No. 05-08-01390-CV
(Hon. Robert M. Fillmore)

PETITIONERS' BRIEF ON THE MERITS

Respectfully submitted,

BARON & BUDD, P.C.
Denyse F. Clancy, Esq. (SBN 24012425)
dclancy@baronbudd.com
John Langdoc, Esq. (SBN 24044583)
jlangdoc@baronbudd.com
3102 Oak Lawn Avenue, Suite 1100
Dallas, TX 75219
(214) 521-3605: Telephone
(214) 520-1181: Facsimile

ATTORNEYS FOR PETITIONERS

ORAL ARGUMENT REQUESTED

IDENTITY OF PARTIES AND COUNSEL

Petitioners provide the following list of the parties to the trial court's judgment and their trial and appellate counsel:

1. **Plaintiffs, Appellees, Petitioners**
   Susan Elaine Bostic, Helen Donnahoe, and Kyle Anthony Bostic, on behalf of Timothy Shawn Bostic, Deceased

Counsel in the Court of Appeals and in the Supreme Court of Texas:

Denyse F. Clancy
Baron & Budd, P.C.
3102 Oak Lawn Avenue, Suite 1100
Dallas, Texas 75219
Tel: (214) 521-3605
Fax: (214) 521-1181

John L. Langdoc
Baron & Budd, P.C.
3102 Oak Lawn Avenue, Suite 1100
Dallas, Texas 75219
Tel: (214) 521-3605
Fax: (214) 521-1181

Counsel in County Court at Law:

Christopher J. Panatier
Simon, Eddins & Greenstone, L.L.P.
3232 McKinney Avenue, Suite 610
Dallas, Texas 75204
Tel: (214) 276-7680
Fax: (214) 276-7699

Charla G. Aldous
Aldous Law Firm
3211 Cedar Springs Road, Suite 200
Dallas, Texas 75201
Tel: (214) 526-5595
Fax: (214) 526-5525

2. **Defendant, Appellant, Respondent**
   Georgia-Pacific Corporation

Counsel in the Court of Appeals and in the Supreme Court of Texas:

Deborah Hankinson
Hankinson Levinger LLP
750 N. St. Paul St., Suite 1800
Dallas, Texas 75201
Tel: (214) 754-9190
Fax: (214) 754-9140

Rick Thompson
Hankinson Levinger LLP
750 N. St. Paul St., Suite 1800
Dallas, Texas 75201
Tel: (214) 754-9190
Fax: (214) 754-9140

Counsel in County Court at Law:

Melvin David Bailey
Bailey Crowe & Kugler
901 Main Street, Suite 6550
Dallas, Texas 75202
Tel: (214) 231-0555
Fax: (214) 231-0556

James Bachman Greer
Kane Russell Coleman & Logan, PC
1601 Elm Street, Suite 3700
Dallas, Texas 75201
Tel: (214) 777-4252
Fax: (214) 777-4299

TABLE OF CONTENTS

INDEX OF AUTHORITIES

Page(s)

CASES

STATUTES

OTHER AUTHORITIES

APPENDIX

REFERENCE CITATION GUIDE

Abbreviations

Susan Elaine Bostic, Helen Donnahoe, & Kyle Bostic (Petitioners)……. Plaintiffs

Georgia-Pacific Corporation……. Georgia-Pacific or Defendant

Record References

Cites to the Reporter's Record are in the form of ([vol. #] RR [page #]).

Cites to the Clerk's Record are in the form of ([vol. #] CR [page #]).

Cites to Plaintiffs' Exhibits are in the form of (PX #).

Cites to Defendants' Exhibits are in the form of (DX #).

Cites to the Appendices attached hereto are in the form of (App. [appendix tab]).

STATEMENT OF THE CASE

Nature of the Case: Wrongful death lawsuit based on exposure to asbestos.

Trial Court: The trial court judge was the Honorable Sally Montgomery, County Court at Law No. 3, Dallas County.

Trial Court Judgment: In the first jury trial in this case, the jury returned a verdict on March 14, 2005 for $9,327,000 ($3,127,000 in compensatory damages, $6,200,000 in punitive damages), allocating 100% fault to Georgia-Pacific. Based on an error in the verdict form, a new trial was granted. In the second jury trial in this case, the jury rendered a verdict of $13,593,917 ($7,554,907 in compensatory damages, $6,038,910 in punitive damages) and found that Georgia-Pacific was 75% responsible.

Georgia-Pacific filed a motion to recuse Judge Montgomery, which was granted. Georgia-Pacific filed a Motion for Mistrial, which was granted by Judge Russell Roden, County Court at Law No. 1, Dallas County. Plaintiffs filed a Motion to Vacate Judge Roden's Order and Enter Judgment, which was granted by Judge D'Metria Benson, the new presiding judge of County Court at Law No. 1, Dallas County. On October 22, 2008, Judge Benson entered the First Amended Final Judgment against Georgia-Pacific for $11,615,263.32 ($6,784,135.32 in compensatory damages, $4,831,128.00 in punitive damages), plus pre-and post- judgment interest. (App. A).

Court of Appeals: Georgia-Pacific appealed the judgment to the Fifth District Court of Appeals on July 29, 2009.

Court of Appeals Panel: Justices David Bridges, Kerry Fitzgerald, and Robert Fillmore.

Court of Appeals Opinion: *Georgia-Pacific Corp. v. Bostic*, 320 S.W.3d 588 (Tex. App. – Dallas, 2010) (App. B and C). Justice Fillmore authored the opinion.

Court of Appeals Holding: The Court of Appeals reversed and rendered the judgment of the trial court, finding that there was legally insufficient evidence of causation.

STATEMENT OF JURISDICTION

This Court has jurisdiction over this appeal because the Court of Appeals decision conflicts with prior decisions of this Court. TEX. GOV'T CODE ANN. § 22.001(a)(2). Specifically:

a. The Court of Appeals held that in order to meet the substantial factor causation standard in an asbestos case, the plaintiffs must show that defendant's asbestos product at issue was the "but for" cause of the plaintiff's asbestos disease, and without which the injury would not have occurred. Consequently, the Court of Appeals' decision conflicts with this Court's holding in *Borg-Warner Corp. v. Flores,* 232 S.W.3d 765, 773 (Tex. 2007) (holding that in an asbestos case, while plaintiffs must show frequent-regular-proximate causation in order to prove substantial factor causation, they are not required to "demonstrate that fibers from the defendant's product were the ones, or among the ones, that *actually* produced the malignant growth.")(App. D.)

b. The Court of Appeals discredited the evidence of Timothy Bostic's exposure to asbestos from Georgia-Pacific asbestos joint compound, and instead relied on contradictory evidence elicited by defendant on cross-examination. Consequently, the Court of Appeals holding conflicts with this Court's decisions in (i) *Merrell Dow v. Havner*, 953 S.W.2d 706, 711 (Tex. 1997)(in determining whether there is no evidence of probative force to support a jury's finding, all the record evidence must be considered in the light most favorable to the party in whose favor the verdict has been rendered, and every reasonable inference deducible from that evidence is to be indulged in that party's favor); and (ii) *City of Keller v. Wilson*, 168 S.W.3d 802, 810 (Tex. 2005). ("No evidence" points may only be sustained when the record discloses one of the following situations: "(a) a complete absence of evidence of a vital fact; (b) the court is barred by the rules of law or of evidence from giving weight to the only evidence offered to prove a vital fact; (c) the evidence offered to prove a vital fact is no more than a mere scintilla; (d) the evidence establishes conclusively the opposite of a vital fact.").

c. The Court of Appeals failed to recognize that proof of substantial factor causation in an asbestos case may vary depending on the type of product and the type of disease at issue. Consequently, the Court of Appeals' decision conflicts with this Court's decision in *Borg-Warner Corp. v. Flores,* 232 S.W.3d 765, 773 (Tex. 2007) (instructing that the requirements for substantial factor causation may differ depending on the type of asbestos product and the type of asbestos disease).

d. The Court of Appeals held that in order to prove substantial factor causation, one must calculate the actual dose of asbestos inhaled by the plaintiff from the defendant's product. Consequently, the Court of Appeals' decision conflicts with this Court's holding in *Borg-Warner Corp. v. Flores,* 232 S.W.3d 765, 772 (Tex.

2007) (holding that the plaintiff must show "the approximate dose to which the plaintiff was exposed," which "need not be reduced to mathematical precision.").

This Court has jurisdiction over this appeal under Government Code § 22.001(a)(2), because the Court of Appeals' decision conflicts with the Court of Appeals' decision in *Smith v. Kelly-Moore Paint Co., Inc.*, 307 S.W.3d 829 (Tex. App. - Fort Worth 2010, no pet.). Compare *Bostic*, 320 S.W.3d at 601 (plaintiff failed to adequately quantify the frequency, proximity and duration of asbestos exposure absent actual measurements of what the plaintiff inhaled) with *Smith*, 307 S.W.3d at 836 (approximate measurements of the fibers released from the asbestos joint compound created a triable issue of fact as to the aggregate dose to which the plaintiff was exposed). Further, the Court of Appeals' decision conflicts with the Court of Appeals' decision in *Georgia-Pacific Corp. v. Stephens*, 239 S.W.3d 304 (Tex. App. - Houston [1st Dist.] 2007, pet. denied). Compare *Bostic*, 320 S.W.3d at 597 (holding that substantial factor causation in an asbestos case requires proof that plaintiff show that the asbestos fibers' from the defendant's product were the actual fibers that produced the harm) with *Stephens*, 239 S.W.3d at 321 (holding that the plaintiff must show specific causation by using epidemiological studies to link the "minimum exposure level (or dosage) of joint compound with a statistically increased risk of developing the disease.").

This Court has jurisdiction over this appeal, because the Court of Appeals has committed an error of law of such importance to the state's jurisprudence that it should be corrected. *See* TEX. GOV'T CODE ANN. § 22.001(a)(6). The continual misinterpretation of this Court's decision in *Borg-Warner Corp. v. Flores,* 232 S.W.3d 765, 772 (Tex. 2007) has made it nearly impossible for plaintiffs to hold an asbestos judgment on appeal. Since this Court handed down the *Borg-Warner* decision in 2007, every asbestos judgment in Texas for plaintiffs has been reversed, and every judgment for defendant affirmed. *See e.g. Smith v. Kelly-Moore Paint Co., Inc.*, 307 S.W.3d 829 (Tex. App. - Fort Worth 2010, no pet.); *Georgia-Pacific Corp. v. Stephens*, 239 S.W.3d 304 (Tex. App. - Houston [1st Dist.] 2007, pet. denied); *Georgia-Pacific Corp. v. Bostic*, 320 S.W.3d 588 (Tex. App. - Dallas, 2010). Moreover, each different Court of Appeals has imposed standards that are not scientifically possible, and thus present a complete bar of litigation to these claims—such as requiring that proof of which fibers caused the disease, or precise calculations of the amount of asbestos inhaled by the injured party despite the fact that these exposures occurred decades ago. The Court of Appeals decision in this case perpetrates the confusion. In order to rectify the confusion this decision has created, and allow individuals who have been wrongfully injured to have their fair day in court with a clear understanding of the law, this Court should grant review, clarify the asbestos substantial factor standard, and reverse the Court of Appeals' erroneous decision.

ISSUES PRESENTED FOR REVIEW

Issue 1: In *Borg-Warner Corp. v. Flores*, 232 S.W.3d 765, 773 (Tex. 2007), this Court held that in an asbestos case, proof of causation does not require that one "demonstrate that fibers from the defendant's product were the ones, or among the ones, that *actually* produced the malignant growth." *Id.* at 773.

Did the Court of Appeals err in holding that in an asbestos case, where multiple exposures combine to cause an individual's disease, proof of causation requires showing that the defendant's asbestos product was the "but for" cause of the disease, without which it would not have occurred?

Issue 2: In *Merrell Dow v. Havner*, 953 S.W.2d 706, 711 (Tex. 1997) and *City of Keller v. Wilson*, 168 S.W.3d 802, 810 (Tex. 2005), this Court held that in determining whether there is no evidence of probative force to support a jury's finding, all the record evidence must be considered in the light most favorable to the party in whose favor the verdict has been rendered, and every reasonable inference deducible from that evidence is to be indulged in that party's favor.

Did the Court of Appeals, in finding no evidence of frequent, proximate, and regular exposure to asbestos, apply the wrong evidentiary standard of review by disregarding all evidence favorable to plaintiff and giving weight only to contradictory evidence elicited by defendant on cross-examination?

Issue 3: In *Borg-Warner*, 232 S.W.3d at 773, this Court held that the requirements for substantial factor causation in an asbestos case may differ depending on the type of disease and the type of asbestos product at issue.

Did the Court of Appeals err in failing to recognize proof of substantial factor causation differs based on type of disease (e.g. mesothelioma versus asbestosis) and type of product (e.g. friable versus encapsulated)?

Issue 4: *Borg-Warner* states that the plaintiff, in proving substantial factor causation in an asbestos case, must show "the approximate dose to which the plaintiff was exposed," which "need not be reduced to mathematical precision." *Borg-Warner*, 232 S.W.3d at 773.

Did the Court of Appeals err in requiring calculations of the dose actually inhaled from the asbestos product in order to show substantial factor causation?

I. INTRODUCTION

The Court should grant review in this case, because the continued misinterpretation by the lower courts of this Court's decision in *Borg-Warner Corp. v. Flores*, 232 S.W.3d 765, 773 (Tex. 2007) has made it scientifically impossible to prove causation in an asbestos case. *See Smith v. Kelly Moore Paint Co., Inc.*, 307 S.W.3d 829 (Tex. App. Fort Worth 2010, no pet.)(upholding summary judgment based on "no evidence" of causation); *Georgia Pacific Corp. v. Stephens*, 239 S.W.3d 304 (Tex. App. – Houston [1st Dist.] 2007, pet. denied) (reversing and rendering asbestos judgment based on insufficient evidence of causation); *Georgia-Pacific Corp. v. Bostic*, 320 S.W.3d 588 (Tex. App. -Dallas, 2010) (reversing and rendering asbestos judgment based on insufficient evidence of causation). Indeed, every judgment for the plaintiff in an asbestos case since *Borg-Warner* has been reversed by the lower courts on appeal.

The Court of Appeals' decision in this case not only continues to perpetrate the confusion surrounding this Court's *Borg-Warner* decision, but by requiring proof of (i) which fibers caused the asbestos-disease, and (ii) calculations of the actual dose of asbestos inhaled, has rendered causation in an asbestos case a literal scientific impossibility. The Court of Appeals' decision thus upends not only the principles set forth by this Court in *Borg-Warner*, but also creates conflicts among the Courts of Appeal. Compare *Bostic*, 320 S.W.3d at 601 (plaintiff failed to adequately quantify the frequency, proximity and duration of asbestos exposure absent actual measurements of what the plaintiff inhaled) with *Smith*, 307 S.W.3d at 836 (approximate measurements of the fibers released from the asbestos joint compound created a triable issue of fact as to

the aggregate dose to which the plaintiff was exposed); compare *also* *Bostic*, 320 S.W.3d at 597 (holding that substantial factor causation in an asbestos case requires proof that the asbestos fibers from the defendant's product were the actual fibers that produced the harm) with *Stephens*, 239 S.W.3d at 321 (holding that substantial factor causation in an asbestos case requires use of epidemiological studies to link the "minimum exposure level (or dosage) of joint compound with a statistically increased risk of developing the disease.").

The confusion surrounding the application of the *Borg-Warner* decision is so profound and of such widespread import, that in 2009 the Texas Senate passed Senate Bill 1123 (SB 1123 by Sen. Duncan – R, Lubbock)[1] in order to legislatively repeal portions of the lower courts' interpretations of *Borg-Warner*.[2] Tex. S.B. 1123, 81st Leg., R.S. (2009) (App. E). Specifically, S.B. 1123 attempted to modify Chapter 90 of the Civil Practice and Remedies Code to state that proof of causation in an asbestos mesothelioma case does not require proof of "the numerical dose, approximate or otherwise, of asbestos fibers" to which the individual was exposed, because this is

[1] *See also* Senate Comm. on State Affairs, Witness List, Tex. S.B. 1123, 81st Leg., R.S. (2009) (App. F); Senate Comm. on State Affairs, Bill Analysis, Tex. S.B. 1123, 81st Leg. R.S. (2009) (App. G); S.J. of Tex., 81st Leg., R.S., at 1170-1171 (2009) (Third Reading of S.B. 1123 Before the S. Comm. on State Affairs) (App. H); Tex. Sen. Comm. of State Affairs Minutes, 81st Leg., R.S. (March 23, 2009) (App. I); Tex. Sen. Comm. of State Affairs Minutes, 81st Leg., R.S. (April 2, 2009) (App. J).

[2] The video testimony of the debates of the State Affairs Committee and the Senate floor on SB 1123 can be viewed at Debate on Tex. S.B. 1123 before the Texas Senate Committee on State Affairs, 81st Leg., R.S. (March 23, 2009) (http://www.senate.state.tx.us/avarchive/?yr=2009&mo=03, from 33:27 to 3:18:22); Debate on Tex. S.B. 1123 before the Texas Senate Committee on State Affairs, 81st Leg., R.S.(April 2, 2009) (http://www.senate.state.tx.us/avarchive/?mo=04&yr=2009&lim=50, from 48:30 to 55:05); Debate on Tex. S.B. 1123 on the Floor of the Senate, 81st Leg., R.S. (April 16, 2009) (http://www.senate.state.tx.us/avarchive/?mo=04&yr=2009&lim=50, from 3:15:59 to 6:30:25); Debate on Tex. S.B. 1123 on the Floor of the Senate, 81st Leg., R.S. (April 20, 2009) (http://www.senate.state.tx.us/avarchive/?mo=04&yr=2009&lim=50, from 1:31:29 to 1:36:57).

scientifically impossible. Tex. S.B. 1123, 81st Leg., R.S. (2009) (App. E). House Bill 1181 (HB 1181 by Eiland – D., Galveston), which like SB 1123 sought to repeal the lower courts' interpretation of *Borg-Warner*, had a hearing in committee, but no vote. Tex. H.B. 1811, 81st Leg., R.S. (2009) (App. K).[3] Accordingly, neither SB 1123 nor H.B. 1181 became law. This Court should grant review of this case, in order to clarify the confusion that has led to conflicts in the Courts of Appeal, the concerned interference of the Texas legislature, as well as an absolute scientific bar to causation proof in an asbestos case.

The Court of Appeals' decision eviscerates the asbestos causation standard as carefully set forth by this Court in *Borg-Warner* and continues the conflicting interpretations of this decision.[4] Plaintiffs pray that the Court grant this Petition for Review, clarify the asbestos substantial factor for Texas, and reverse the decision of the Court of Appeals.

II. STATEMENT OF THE FACTS

Timothy Bostic was diagnosed with mesothelioma, a fatal asbestos cancer, on October 31, 2002, at the age of forty. 7 RR 154; 7 RR 166. Mesothelioma is a tumor that develops in the mesothelial tissue, which is the tissue that lines the body's organs. 5 RR 84. In Timothy Bostic's case, his mesothelioma developed in the lining around his lungs. 11 RR 47. Mesothelioma is known as a "signal" tumor for asbestos exposure, meaning

[3] *See also* House Judiciary & Civil Jurisprudence Comm., Witness List, Tex. H.B. 1181, 81st Leg., R.S. (2009) (App. L); Tex. House Judiciary & Civil Jurisprudence Comm. Corrected Minutes, 81st Leg., R.S. (March 30, 2009) (App. M).

[4] *See e.g.,* *Georgia-Pacific v. Stephens*, 239 S.W.3d 304 (Tex. App.—Houston [1st Dist.] 2007, pet. denied); *Smith v. Kelly-Moore Paint Co., Inc.*, 307 S.W.3d 829 (Tex. App.—Fort Worth 2010, no pet.).

that asbestos exposure is an epidemiologically proven cause of mesothelioma. 5 RR 85-86. Timothy Bostic died less than one year after his diagnosis, on September 5, 2003. 8 RR 66. He was survived by his wife of eighteen years, Susan, his eighteen year-old son, Kyle, his father, Harold Bostic, and his mother, Helen Donnahoe. 7 RR 167-8.

According to the U.S. Department of Labor, "OSHA is aware of no instance in which exposure to a toxic substances has more clearly demonstrated detrimental health effects on humans than has asbestos exposure." PX 2. OSHA recognizes that the life-threatening diseases caused by asbestos exposure include lung cancer, cancer of the mesothelial lining of the pleura and peritoneum, asbestosis, and gastrointestinal cancer. *Id.* There is no known safe level of exposure to asbestos. 5 RR 140.

A. Timothy Bostic's exposure to asbestos.

Timothy Bostic's primary exposures to asbestos were from (i) as a child working with his father with and around Georgia-Pacific asbestos joint compound for ten years from 1967 to 1977 in Palestine, Texas; (ii) working for three months in the "hot section" at a Palestine glass plant ("Knox Glass") in the early 1980's; (iii) working for six months with gaskets and insulation as a welder's helper at Palestine Contractors in 1977-78; (iv) household exposure to his father's clothes when he was a child; and (v) limited use of brake products.[5] 7 RR 176-77; 8 RR 21-22; 7 RR 186-88; 12 RR 28-29; 7 RR 18-19; DX-33.

[5] Timothy worked with "three or four gaskets" a week and some pipe insulation for six months at Palestine Contractors from 1977-78. 8 RR 18-19. He also estimated that he did about four brake jobs a year helping his father. 7 RR 186. He performed "less than ten" clutch jobs in his lifetime. 8 RR 24.

After getting his Bachelor's Degree in 1984, Timothy worked as a correctional officer at the Texas Department of Criminal Justice. 7 RR 190. He retired as Captain of the Correctional Officers when he was diagnosed with mesothelioma. 7 RR 190. There is no evidence that he was exposed to asbestos while working at the Texas Department of Criminal Justice.

B. Asbestos joint compound.

Joint compound is a paste (sometimes called "mud") used in construction to finish out and smooth over gaps between pieces of sheetrock, corners, and nailheads, and for smoothing out cracks that occur in walls. PX 17 at Step 8 (1974 Georgia-Pacific "Do-It Yourself" Manual on Gypsum Wallboard Application) (App. N); 10 RR 64-65; PX 26 at 38790 (App. P) . Joint compound comes in both dry and pre-mixed formats. 10 RR 64. Prior to 1978, some joint compound manufacturers made joint compound by combining asbestos with a filler-type material that would harden on the wall, such as a plaster-of-paris like material called gypsum. 10 RR 64. Asbestos exposure occurs during the mixing, sanding, and clean-up of joint compound. 10 RR 71. During the time period that Timothy Bostic used Georgia-Pacific asbestos joint compound, Georgia-Pacific recommended a "minimum" of three coats of asbestos joint compound be applied to all taped joints, and sanded after each application. PX-17 (App. N).

Georgia-Pacific sold bags of asbestos Triple-Duty dry joint compound, and one and five-gallon containers of asbestos pre-mixed Ready-Mix joint compound, from 1965

until asbestos joint compound was banned by the United States Government in 1977.[6] 8 RR 158-59, 176. Georgia-Pacific asbestos joint compound contained from two to seven percent asbestos. 8 RR 169; PX-33; PX-9. The bags of Georgia-Pacific Triple Duty Joint Compound manufactured in Texas contained seven percent asbestos.[7] PX-12.

Georgia-Pacific's expert, Dr. Richard Kronenberg, testified that joint compound workers were in a trade known generally to be exposed to asbestos, because the asbestos in joint compound was friable,[8] and not encapsulated, such as in a brake or gasket. 15 RR 213-14. In 1977, the Consumer Products Safety Commission ("CPSC") banned asbestos-joint compound for use by consumers on the basis that "[t]hese products present an unreasonable risk of injury due to inhalation of fibers which increase the risk of developing lung cancer and mesothelioma, diseases which have been demonstrated to be caused by exposure to asbestos fibers." PX-26 at 38790 (App. P)[9]; 5 RR 145; 6 RR 11.

---

[6] Georgia-Pacific Ready-Mix joint compound contained asbestos until 1977. 8 RR 54. In 1976, Georgia-Pacific stated that it would not market an asbestos-free Ready-Mix until OSHA "start[s] a vigorous enforcement program . . . ." PX-40. A March 3, 1977 Georgia-Pacific intracompany memorandum stated: "My feeling on asbestos remains the same: I want to continue to provide an asbestos Ready-Mix as long as possible." PX-20. Georgia-Pacific temporarily introduced an asbestos-free bag of joint compound in 1973, but then shortly thereafter reverted back to bags of asbestos-containing joint compound. PX-54. By 1974, Georgia-Pacific was only "market testing, in limited markets, a dry asbestos free powder product." PX-41. Over 74 percent of the joint compound shipped by Georgia-Pacific in 1977 contained asbestos. 9 RR 65.

[7] The cost of shipping played a major role for Georgia-Pacific in Georgia-Pacific's ability to sell the product. 8 RR 179. Therefore, the seven percent asbestos joint compound manufactured in Acme, Texas was what was sold to consumers of joint compound in Texas. 8 RR 179, PX-12.

[8] This Court noted the potential difference in hazards as between friable and encapsulated asbestos: "We note, too, that proof of causation may differ depending on the product at issue; '[i]n some products, the asbestos is embedded and fibers are not likely to become loose or airborne, [while] [i]n other products, the asbestos is friable." *Borg-Warner*, 232 S.W.3d at 773, citing *In re Ethyl Corp*., 975 S.W.2d 606, 617 (Tex. 1998). The Consumer Products Safety Commission stated that the asbestos in joint compound was "free-form asbestos," which is "that which is not bound, woven, or otherwise 'locked-in' to a product by resins or other bonding agents, or those from which fibers can readily become airborne with any reasonably foreseeable use." PX 26 at 38790 (App. P).

[9] Plaintiff's Exhibit 26 is the Proposed Rulemaking for the CPSC Ban on Asbestos Joint Compounds. Respirable Free-Form Asbestos, 42 Fed. Reg. 38,782 (proposed July 29, 1977) (to be codified at 16 C.F.R. 1145.4 (1977)) (App. P). The Ban was enacted on December 15, 1977. *See* 16 C.F.R. 1145.4 (1977).

The CPSC also recognized that children exposed at the same age as Timothy Bostic were particularly at risk for exposure to asbestos joint compound. PX-26 at 38786 (App. P). The CPSC concluded: "Asbestos in the household presents a great risk due to the presence in the household of persons, such as children, who may be particularly vulnerable to carcinogens. It is generally observed that, because of the long latency period, exposure to inhalable asbestos . . . can be life-shortening for children." *Id.*

C. Timothy Bostic's exposures to Georgia-Pacific asbestos joint compound.

The Court of Appeals misstates the evidence in concluding that there is "limited" evidence of Timothy Bostic's exposure to Georgia-Pacific's asbestos joint compound. *Bostic*, 320 S.W.3d at 588. Timothy was exposed to Georgia-Pacific asbestos joint compound from 1967 to 1977 while working on residential construction with his father. 7 RR 178. Timothy testified that he was around joint compound work his "whole life," and that his father taught him to work with joint compound when he was "real young." 7 RR 178. Harold Bostic testified that he used Georgia-Pacific asbestos joint compound when working with Timothy for 98 percent of the time, "or more." 12 RR 39. Harold Bostic testified that when he was working with Timothy, Georgia-Pacific joint compound was "the No. 1 product." 12 RR 33. During the ten-year period from 1967 to 1977, Timothy worked with Harold Bostic "on numerous occasions" using both dry and Ready-Mix Georgia-Pacific joint compound. 12 RR 34-36.

Harold testified that he "always had an extra job working for the family," that he "worked about six hours a day after my regular job;" and that he was the family

"repairman." 12 RR 22-23; 83-84. Harold Bostic testified that he worked with his son just about every day from when he was five until the age of ten, and then every weekend after that.[10] 12 RR 136. During this period, Harold testified that Timothy used Georgia-Pacific asbestos joint compound "many, many times." 12 RR 137. Timothy recalled "as a little guy helping him mud the holes . . . ." 7 RR 178. Timothy recalled observing joint compound work prior to the age of ten, and performing it himself ever since. 7 RR 178. In fact, Harold testified that "between the time Timmy was five years old until about 15 or 16 years old," he could "see him sand . . . that joint compound and breathing in that dust."[11] 12 RR 141. Harold testified that use of the Georgia-Pacific joint compound created dust, especially during sanding, and that Timothy breathed the dust. 12 RR 35-36. When Timothy was five to seven years old, Harold testified that Timothy would help mix the asbestos joint compound: "[I]f I was doing sheetrock work, he'd mix the mud,[12] every kid likes mud. And he'd mix it for me as best he could. And then I'd have to follow him up and get the lumps out. And then he would spackle as far up as he could reach. I wouldn't let him get up on the ladder because they're so dangerous, when he was that small." 12 RR 28. From the time he was very little, Timothy would help sand asbestos joint compound "as far up as he could reach." 12 RR 32.

[10] When Harold and his wife divorced, Timothy was ten years old. 12 RR 26. From that point on, Harold got Timothy every weekend and during the summer. 12 RR 26.

[11] Timothy Bostic was also exposed to Georgia-Pacific asbestos joint compound by means of household exposure to his father's clothes. DX-33.

[12] Harold Bostic referred to joint compound as "mud." 12 RR 28-29.

Mesothelioma has a general latency period of thirty to forty years, meaning that the cancer will develop almost thirty to forty years after exposure to asbestos. 5 RR 107. Timothy Bostic was born in 1962, and was diagnosed with mesothelioma in 2002, at the age of 40. 7 RR 166. Thus, Timothy Bostic's exposures to Georgia-Pacific asbestos joint compound, which occurred up to thirty-five years prior to his diagnosis, were directly within the period of exposure that, based on latency calculations, would have been extremely significant in the development of his mesothelioma. Indeed, Georgia-Pacific's expert Dr. Richard Kronenberg testified that taking into consideration the average latency period for asbestos exposure and mesothelioma, Timothy's years of exposure to asbestos from Georgia-Pacific asbestos joint compound were "extremely important in the development of his mesothelioma." 15 RR 221-22.

Harold Bostic did not know that Georgia-Pacific asbestos joint compound could be hazardous to Timothy's health, nor did he see any warnings on the Georgia-Pacific joint compound. 12 RR 36-37. Harold stated that if he had known that the Georgia-Pacific asbestos joint compound that Timothy was using was dangerous and could cause harm, he "wouldn't even have let him in the same building." 12 RR 60.

D. Approximate quantum of asbestos fibers released from Georgia-Pacific asbestos joint compound.

Plaintiff's expert Dr. William Longo tested the amount of asbestos fibers released from Georgia-Pacific dry and pre-mixed joint compound while doing the same tasks as performed by Harold and Timothy Bostic—mixing, sanding, and sweeping of Georgia-Pacific asbestos joint compound. 10 RR 73 Dr. Longo has a Ph.D. in Materials Science

and Engineering. 10 RR 37, PX-66. He has studied asbestos products for over twenty-five years. 10 RR 37. He developed a protocol for the Environmental Protection Agency on how to analyze the amount of asbestos in dust. 10 RR 42. He also wrote the American Society for Testing Material's dust method for the analytical assessment of measuring asbestos dust. *Id.* He is the former chairman of the Transmission Electron Microscopy Analytical Committee for the National Asbestos Council, which developed measurement methods to analyze asbestos. *Id.* He has published peer-reviewed papers on the ability of asbestos products to release asbestos. *Id*; *see also* PX-66. In order to test the amount of asbestos released from asbestos products, Dr. Longo follows OSHA and NIOSH protocols for measuring airborne asbestos. 10 RR 59-60.

Dr. Longo's tests of the Georgia-Pacific asbestos joint compounds demonstrated that persons who mixed, sanded, and cleaned-up Georgia-Pacific asbestos joint compound were exposed to levels of asbestos thousands of time higher than the average background of asbestos in the air of 0.0005 fibers per cubic centimeter (cc).[13] 10 RR 136; 95. Dr. Longo measured a range of 2.7 to 6.6 fibers per cc when sanding and 4.7 fibers per cc when cleaning-up Georgia-Pacific Ready-Mix joint compound. 10 RR 84. Dr. Longo measured 1.6 fibers per cc when mixing, 1.5 fibers per cc when sanding, and 1.4 fibers per cc when cleaning-up "dry" Georgia-Pacific asbestos joint compound.[14] 10 RR 87. In addition, Dr. Longo testified that dumping a half a bag of joint compound

[13]The EPA determined that the average background content of asbestos in the air is 0.0005 fibers per cc. 10 RR 95.

[14]The measurements of the dry bag of asbestos were lower than the Ready-Mix, because Dr. Longo only measured nine linear feet of product from the dry bag. 10 RR 87. In other words, the less product that is used, the less asbestos dust will be released into the air.

released asbestos levels of 25 to 50 fibers per cc. 10 RR 112. The peer-reviewed, published literature shows that exposures to asbestos from joint compound work is comparable to the asbestos exposures of asbestos insulators, with a mean exposure to asbestos of 10 fibers per cc.[15] 5 RR 129, 140-41.

Dr. William Longo calculated that in a twenty-five pound bag of Georgia-Pacific joint compound containing five percent asbestos, there would be 567,500,000 micrograms of asbestos per bag, which equals 11.4 quadrillion asbestos fibers. 10 RR 108-10.

E. Georgia-Pacific sold asbestos joint compound despite the fact that it knew asbestos joint compound caused cancer.

Timothy Bostic worked with and around Georgia-Pacific asbestos joint compound from 1967-1977.[16] By 1965, the year that Georgia-Pacific began selling asbestos joint compound, there were over a thousand publications in the literature discussing asbestos-related disease. 6 RR 9. In 1966, the Gypsum Association, of which Georgia-Pacific

---

[15] *See* Rohl et al, Exposure to Asbestos in the Use of Consumer Spackling, Patching and Taping Compounds, SCIENCE, vol. 189, no. 4204 (Aug. 15, 1975) (measuring "significant" exposure to asbestos up to 45 fibers per cc for joint compounds containing 5 to 12 percent asbestos by weight). 7 RR 31, 62-64. *See also* Stern, et al., Mortality Among Unionized Construction Plasterers and Cement Masons, AM. J. IND. MED., vol. 39, no. 4 (April 2001) (finding that asbestos fiber concentrations generated by sanding asbestos joint compound were similar to those measured in the work environment of asbestos insulation workers who had a seven fold increase in risk of cancer of the lung and the pleura); Fischbein, et al., Drywall Construction and Asbestos Exposure, AM. INDUS. HYG. ASSOC. J., vol. 40, no. 5, at 402-07 (1979) (finding that asbestos joint compound workers have a significant risk of exposure to asbestos, and "asbestos disease is an important hazard in this trade."); Nicholson, Occupational and Community Asbestos Exposure from Wallboard Finishing Compounds, BULL. N.Y. ACAD. MED., vol. 51, no. 10, at 1180 (1975) (showing x-ray abnormalities in 37 of the 63 joint compound workers who had ten or more years exposure to asbestos joint compound); Verma & Middleton, Occupational Exposure to Asbestos in the Drywall Taping Process, AM. INDUS. HYG. ASSOC. J., vol. 41, no. 4, at 264-69 (1980) (finding that joint compound workers are "occupationally exposed to potentially hazardous asbestos dust concentration in their work . . .[A] person engaged in mixing, sanding and sweeping of asbestos-containing compound should wear an approved respiratory device.") 5 RR 129-39.

[16] His father also took him to his construction sites while Timothy Bostic was a baby prior to 1967, and set him up in a swing to watch the work. 15 RR 77.

was a member, informed its members that "[g]overnment investigations indicate the possibility of the use of asbestos as a cause of lung disease in industry. Payment of claims arising from this could cost our industry many dollars unless counter action is taken." 6 RR 27; PX-5. In 1967, Georgia-Pacific was present at a Gypsum Association meeting where it was noted that inhabitants of a neighborhood surrounding an asbestos plant were getting lung carcinomas. 6 RR 28-29; PX-6. In 1970, the Georgia-Pacific Safety Supervisor wrote an intra-office memorandum advising that the Mount Sinai Hospital had found a spot on the lung of a man who did joint sanding on the job, and warned that "the drywall industry might be on the next targets for their lung research." PX-8.

In 1970, Georgia-Pacific wrote to the Gypsum Association that "[a]sbestos is very harmful." 6 RR 33-34; PX-9. To avoid the cost of future product liability claims, Georgia-Pacific suggested placing blame on contractors (which would include persons such as Harold and Timothy Bostic): "We realize that someone will be the whipping boy. Also, product liability will be stressed. It is our opinion that the entire blame can be placed on the contractor for not insisting on respirators and dust masks while sanding." 6 RR 34; PX-9. In 1971, the National Gypsum Company wrote to the President of Georgia-Pacific: "Our tests indicate that sanding of joint treatment products . . . offer some substantial potential hazards." 6 RR 36; PX-11. In 1972, the Texas State Department of Health wrote to the plant manager of the Georgia-Pacific plant in Acme, Texas that "asbestos has recently been recognized as one of the more dangerous pneumoconiosis producing substances," "with indisputable evidence connecting asbestos

exposure to increased probability of lung cancers and mesotheliomas . . . ." 6 RR 37-38; PX-12.

As of 1972, federal law required that asbestos warning labels be placed on asbestos products. 5 RR 23; PX-4. On April 11, 1973, almost a year after OSHA promulgated these regulations, Georgia-Pacific stated "In view of the OSHA regulations, we believe it is in our best interest to begin marking our bags of joint compound which contain asbestos fiber." 7 RR 65; PX-13; 9 RR 93. However, Georgia-Pacific determined that there was no need to begin labeling its Ready-Mix joint compound in compliance with OSHA at that time. 7 RR 65-66; PX-13. In 1974, OSHA issued a citation to the Acme, Texas plant for not labeling one-gallon cans of asbestos Ready-Mix joint compound. 6 RR 48; PX-18.

Georgia-Pacific did not warn its consumers that respirators should be worn while sanding, despite its knowledge that respirators were necessary to avoid inhaling the hazardous asbestos dust.[17] In 1974, Georgia-Pacific produced a manual on asbestos joint compounds, with a picture of a father working while the son mixed the joint compound on the front cover. PX-17 (App. N). The manual was "designed for the average homeowner who's involved in a home-improvement project." 6 RR 44; PX-17. The manual recommended sanding the joint compound after application, a task that Georgia-Pacific knew would create unsafe levels of asbestos dust. 6 RR 40; PX-17. Georgia-

[17] On May 13, 1974, Mr. Burch, the head of sales for Georgia-Pacific, wrote to all Georgia-Pacific Gypsum Sales Managers: "[W]e do know that the dust level in the mixing and sanding of joint compounds is sufficiently high that respirators should be worn . . . . Respirators should be worn while sanding." PX-41.

Pacific placed no warnings in this manual as to the hazards of asbestos dust, nor did it advise that users of the asbestos joint compound use respirators. 6 RR 40; 44; PX-17.

In May 17, 1974, Eugene Burch, head of sales for Georgia-Pacific, reported to Mr. Wilson, the head of the Georgia-Pacific Gypsum Division, that there were 17 actual cases of fibrosis in the lungs of members of the New York local painters union who performed work with asbestos joint compound. 9 RR 95-96. Mr. Burch's report stated: "Taping and spackling compounds used in drywall finishing may expose workers to dangerous levels of asbestos fibers, according to OSHA officials." 9 R 97. Despite having seen actual cases of asbestos-related disease, in 1977 Mr. Burch advised a customer concerned with the welfare of his children that there were no dangers from using asbestos joint compound. 9 RR 98-99; PX 22, 23. He told the customer that "there was no known case of harm" from asbestos. 9 RR 98.

In 1975, Georgia-Pacific calculated that it could make more profits by selling asbestos joint compound than asbestos-free joint compound:

> We are benefitting from various manufacturers attempting to get asbestos free ready mix into the market. Eventually the others will probably find a way to make it and make it acceptable but the damage will already been done and they'll have no business. Let's keep this in mind when we come to ours and not market an asbestos free type . . .

PX-19.

On April 28, 1977, Georgia-Pacific received notice that the CPSC had voted unanimously to ban the use of asbestos joint compounds. 6 RR 45-46; PX-21. On August 3, 1977, the President of Georgia-Pacific urged the branches to expel their inventories of asbestos joint compounds:

> You're probably aware, but in case you have not been advised, the [CPSC] has finally published in the federal register the proposed rule making for joint cement products containing asbestos . . . This means we have roughly 45 to 60 days to dispose of our inventories of joint cement containing asbestos. It would seem appropriate that the branches should be advised of the need to expel their inventories of asbestos joint compound as soon as possible.

PX-43; 9 RR 114-15.

F. The Court of Appeals misstates the evidence as to the Knox Glass exposures.

The Court of Appeals misstates the facts in claiming that Timothy was exposed to asbestos for three full summers at Knox Glass, from 1980 to 1982. *Bostic*, 320 S.W.3d at 594. Timothy had two different responsibilities at Knox Glass: in the "cold end" of the plant he made boxes, packed glass, and performed janitor work; and in the "hot end" he was exposed to asbestos while he performed mechanic work and clean-up. 7 RR 172. Of the three summers he worked at Knox Glass, Timothy estimated that he spent an aggregate of only three months in the hot end, which would mean only one summer of work around asbestos-containing products. 8 RR 42. Rather than viewing the evidence in a light most favorable to Plaintiffs, the Court of Appeals instead states that Plaintiffs "***seek to narrow*** the time period of exposure to asbestos and asbestos-containing products to three months by ***asserting*** that to be the cumulative amount of time that Timothy worked in the hot end of the plant." *Bostic*, 320 S.W.3d at 594 note 7 (emphasis added). In fact, Timothy himself testified that he only worked for three months in the hot end. 8 RR 42. In addition, Harold Bostic, Timothy's father, testified that Timothy would only cut asbestos-cloth in the "hot end." 12 RR 63. Georgia-Pacific's expert, Dr. Richard

Kronenberg, who is board certified in internal medicine and pulmonary disease,[18] and who performed a medical study of the Knox Glass workers, testified that Timothy Bostic's exposure to asbestos at Knox Glass would be "on really the extreme low end of exposure for the folks out at the glass plant." 15 RR 218-19.

The Court of Appeals also errs in stating that Timothy and his father "underwent testing to determine whether they had contracted an asbestos-related disease a result of working at Knox Glass . . ." *Bostic*, 320 S.W.3d at 594, note 6. In fact, Dr. Kronenberg, who performed the test, and found both chrysotile and amphibole fibers in Timothy Bostic's lungs,[19] testified that there was no way to determine which occupational exposures these fibers came from, and thus it was error to ascribe these fibers solely to Knox Glass. 15 RR 224.

G. Plaintiffs did not rely on the "each and every exposure" theory to prove substantial factor causation.

The Court of Appeals errs by holding that the "each and every exposure theory" is the methodology that the experts used in determining whether the exposure from Georgia-Pacific's asbestos joint compound was a substantial contributing factor. *Bostic*, 320 S.W.3d at 598 ("We agree with Georgia-Pacific's assertion that appellees did not establish substantial-factor causation to the extent they improperly based their showing of specific causation on their expert's testimony and the testimony of Dr. Kronenberg that each and every exposure to asbestos caused or contributed to cause Timothy's mesothelioma.")

[18] 15 RR 185.

[19] 15 RR 199.

In a persistent disregard for basic scientific principles, the Court of Appeals fails to recognize the difference between (i) the scientific tenet—adopted by both Plaintiffs' and Georgia-Pacific's experts—that every fiber inhaled necessarily contributes to an individual's aggregate fiber burden; and (ii) the analysis performed as to the frequency, regularity, and proximity of Timothy Bostic's Georgia-Pacific asbestos joint compound exposure. Indeed, Georgia-Pacific's expert in industrial hygiene, Dr. William Dyson, testified that "by definition" each and every exposure increases one's lifetime total dose. 15 RR 90. Georgia-Pacific's expert in internal medicine and pulmonology, Dr. Richard Kronenberg, testified: "Asbestos diseases are—are—result from a total accumulated exposure over a lifetime, and any—any exposure contributes." 15 RR 205. That this principle exists, however, does not mean that the experts in this case relied on the theory that "every fiber" is a substantial contributing factor. Indeed, the opposite is true.

Dr. Samuel Hammar is a board certified pathologist who has specialized in anatomic, clinical, and experimental pathology for over thirty-one years. 11 RR 9. He is the co-editor of a textbook entitled PULMONARY PATHOLOGY, which is in every medical library in the United States.[20] 11 RR 18. He is the author of approximately forty peer-reviewed articles on the subject of asbestos and mesothelioma. 11 RR 21. He is also the co-author of the book ASBESTOS: RISK ASSESSMENT, EPIDEMIOLOGY, AND HEALTH EFFECTS, which addresses the diseases that asbestos can cause, as well as technical

[20] *See* PULMONARY PATHOLOGY (David Dail & Samuel P. Hammar, eds., 1994).

aspects of asbestos related medicine."[21] 11 RR 22. He has been a member for seventeen years of the U.S.-Canadian Mesothelioma Panel, which is a panel of twelve experts in mesothelioma who review and confirm diagnoses of mesothelioma made by other pathologists. Georgia-Pacific's expert, Dr. Feingold, testified that Dr. Hammar is a "world renowned pathologist." 13 RR 162.

Dr. Hammar analyzed the mathematical threshold of asbestos exposure leading to an increased risk of mesothelioma, and testified that Timothy Bostic's ten year exposure to Georgia-Pacific asbestos joint compound would have been enough in and of itself to cause his mesothelioma. 11 RR 49. Specifically, contrary to the court of appeal's assertion that Dr. Hammar relied on the "each and every exposure theory" to opine that the Georgia-Pacific asbestos joint compound was a substantial contributing factor, Dr. Hammar testified that 0.1 fiber/cc years is the minimum threshold of asbestos exposure that will lead to an increased risk of mesothelioma.[22] Dr. Hammar testified Timothy Bostic's "primary occupational exposure was . . . in the construction industry." 11 RR 48. Dr. Hammar stated that if Timothy Bostic had ten years of asbestos exposure from Georgia-Pacific asbestos joint compound, and three summers of potential exposure at Knox Glass, it does not "make common sense to ignore the exposure to Georgia-Pacific products." 11 RR 140. Dr. Hammar testified that Timothy Bostic was exposed to

[21] *See* ASBESTOS: RISK ASSESSMENT, EPIDEMIOLOGY, AND HEALTH EFFECTS (Ronald F. Dodson and Samuel P. Hammer, eds. 2005).

[22] Dr. Hammar testified that 0.1 fibers/cc of asbestos exposure gives rise to an increased risk of seven cases per 100,000. 11 RR 37. Given that the expected is one case per million persons, that is a 70 times increased rate of death at an exposure of 0.1 fiber per cc/year. 11 RR 37.

enough Georgia-Pacific asbestos joint compound to, in and of itself, have caused his mesothelioma:

> Q. Was Timothy Bostic exposed at high enough levels, to your knowledge, in doing this drywall work, in mixing, sanding, and cleaning up of drywall materials sufficient to cause the disease mesothelioma?
>
> A. Yes.

11 RR 49.

Additionally, Georgia-Pacific's expert, pulmonary physician Dr. Richard Kronenberg, testified that "Timothy Bostic's exposure to drywall products containing asbestos as a young person played a significant contributing factor in the development of his mesothelioma." 15 RR 221.

Yet instead of acknowledging this testimony, let alone viewing it in a light most favorable to Plaintiffs, the Court of Appeals draws the incorrect conclusion that Plaintiffs' experts testified that the Georgia-Pacific asbestos joint compound exposure was a substantial contributing factor based on the "every fiber" contributes theory, as opposed to considering Timothy Bostic's frequency, regularity, and proximity of exposure to Georgia-Pacific asbestos joint compound. In so doing, the Court of Appeals misstates the evidence.

Finally, Timothy Bostic was between 5-15 years old at the time of his exposure to Georgia-Pacific asbestos joint compound. Both Plaintiffs and Georgia-Pacific's experts testified that children are more susceptible than adults to the impact of environmental toxins. 4 RR 149-50; 5 RR 101; 13 RR 216-17.

III. SUMMARY OF THE ARGUMENT

This Court's 2007 decision in *Borg-Warner v. Flores* addressed a fact scenario in which it was highly disputed whether the plaintiff's lung scarring was an asbestos disease; none of the plaintiff's experts had ever studied the specific asbestos brake product at issue; and it was unclear what indeterminate amount of time that the plaintiff had worked with the defendant's asbestos brake products, as opposed to a multitude of other exposures. *Borg Warner*, 232 S.W.3d at 771-772. Faced with these facts, this Court held that evidence of "some" exposure to asbestos is not enough, and that in order to prove causation in an asbestos case, the plaintiff must prove that exposure to the defendant's product was a "substantial contributing factor" towards the plaintiff's asbestos disease. *Id.* at 773.

Since 2007, the misapplication of and confusion surrounding this Court's holding in *Borg-Warner* has resulted in an absolute bar to proving causation in an asbestos case, conflicts among the Courts of Appeals as to what is required to prove causation in an asbestos case, and even the introduction of bills in the Texas House and Senate that would repeal the lower courts' various and divergent interpretations of *Borg-Warner*.[23] In this case, the Court of Appeals has so distorted this Court's holding in *Borg-Warner* as to make it scientifically impossible to prove causation in an asbestos case, even where, as here, the individual has a cancer that is known as a signature cancer for asbestos exposure—mesothelioma. Accordingly, this Court should grant review of this case in order to clarify the asbestos causation standard.

[23] *See supra* notes 1-3 and text accompanying.

In this case, the Court of Appeals erred by holding that Plaintiffs must in essence trace the asbestos fiber from the Georgia-Pacific asbestos joint compound to Timothy Bostic's cancer in order to show "but for" causation, which is not only scientifically impossible, but also contrary to this Court's holding in *Borg-Warner*. The Court of Appeals further erred in failing to apply the well-settled standard for "no evidence" review, and instead discredited all evidence favorable to Plaintiffs, and adopted only those points elicited by Georgia-Pacific on cross-examination. Additionally, the Court of Appeals ignored this Court's admonishment in *Borg-Warner* that the level of proof necessary to prove substantial factor causation in an asbestos case may vary based on the type of product and disease at issue. Here, in contradiction to *Borg-Warner*, the Court of Appeals failed to modify the level of proof necessary to show substantial factor causation, where Timothy Bostic was exposed to highly friable asbestos from joint compound, and where Timothy's disease—mesothelioma—is caused by extremely low levels of exposure to asbestos. Finally, the Court of Appeals incorrectly required that Plaintiffs calculate the dose of asbestos actually inhaled from Georgia-Pacific's product in order to show substantial factor causation, even though this is (i) not scientifically possible; and (ii) not required under *Borg-Warner*.

The erroneous interpretation of this Court's holding in *Borg-Warner* will continue to place an insurmountable bar to proving asbestos causation and perpetrate widespread confusion and injustice, which the plain language of *Borg-Warner* reveals that this Court did not intend. Plaintiffs pray that this Court grant this Petition for Review, clarify the asbestos causation standard, and reverse the decision of the Court of Appeals.

IV. ARGUMENT

A. *Borg-Warner v. Flores* requires "substantial factor" causation, not "but for" causation.

In a toxic tort case, the plaintiff must show both general and specific causation. *See* *Merrell Dow Pharms. v. Havner*, 953 S.W.2d 706, 714-15, 720 (Tex. 1997). "General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether a substance caused a particular individual's injury." *Havner*, 953 S.W. 2d at 714. Here, as noted by the Court of Appeals, Georgia-Pacific does not contest general causation—e.g. Georgia-Pacific does not contest that asbestos exposure from Georgia-Pacific asbestos joint compound can cause mesothelioma. *Bostic*, 320 S.W.3d at 595. Rather, Georgia-Pacific contests specific causation—e.g. whether Timothy Bostic's exposure to Georgia-Pacific's asbestos joint compound was a cause of Timothy Bostic's mesothelioma. *Id.*

Thus, critical to this analysis is how this Court has defined specific causation in the context of an asbestos case. In *Borg-Warner v. Flores*, this Court concluded that exposure to "some" respirable fibers is not sufficient to show that asbestos was a substantial factor in causing asbestosis. *Borg-Warner*, 232 S.W.3d at 766. In *Borg-Warner*, Plaintiff Arturo Flores, a mechanic, was alleged to suffer from asbestosis scarring, a disease which this Court recognized is "usually observed in individuals who have had many years of high-level exposure, typically asbestos miners and millers, asbestos textile workers, and asbestos insulators." *Id.* at 771. While this Court understood that Mr. Flores was exposed to "some asbestos," there was no approximate

quantum of his total amount of asbestos exposure sufficient to conclude whether he had enough exposure to cause his alleged disease, nor was there evidence of what percentage of his exposure came from Borg-Warner products, the defendant in the case. *See id.* at 771-72. Indeed, it was hotly contested at trial whether Mr. Flores even suffered from asbestosis scarring. *See id.* at 766. (Mr. Flores, who had a 50-pack/-year smoking history, had a chief medical complaint at the time of trial of shortness of breath, which he testified manifested itself after he had been mowing the lawn for 35-40 minutes. *See id.* at 768). Thus, in *Borg-Warner*, this Court stated that in determining whether a defendant's asbestos product was a cause of the plaintiff's disease, Mr. Flores' "indeterminate exposure" was not sufficient, and the appropriate specific causation test in an asbestos case is the substantial factor test: "In asbestos cases, then, we must determine whether the asbestos in the defendant's product was a substantial factor in bringing about the plaintiff's injuries." *Borg-Warner*, 232 S.W.3d at 770.

1. *Borg-Warner* does not require proof of "but for" causation.

The Court of Appeals erred in holding that *Borg-Warner* requires proof that (i) an asbestos product is a "substantial factor" in causing the plaintiff's disease, and that (ii) the asbestos product is the "but for" cause of the disease, meaning that here the plaintiff must show that the exposure to Georgia-Pacific's asbestos fibers was the event "without which the [mesothelioma] would not have occurred." *See Bostic*, 320 S.W.3d at 597. In its attempt to graft "but for" causation onto the "substantial factor" test established by *Borg-Warner*, the Court of Appeals actually misquotes this Court by adding "but for" language where there was none: "'In asbestos cases, then, we must determine whether the asbestos

in the defendant's product was a substantial factor in bringing about the plaintiff's injuries' and without which the injuries would not have occurred." *Id.* (quoting from *Borg-Warner* as to substantial factor, but adding the additional language "and without which the injuries would have occurred."). Therefore, the Court of Appeals erroneously concludes that because Plaintiff's expert Dr. Hammar could not state that Timothy Bostic would not have developed mesothelioma "absent exposure to Georgia-Pacific asbestos-containing joint compound," Plaintiffs' "evidence is insufficient to satisfy the required substantial-factor causation element for maintaining this negligence and product liability suit." *Bostic*, 320 S.W.3d at 596-597.

The Court of Appeals therefore requires a scientifically impossible proposition—that proof of causation in an asbestos case requires tracing the fibers from the defendant's product to the individual's disease, in order to show that "but for" the exposure to defendant's product, the individual would not have developed the disease. This conclusion ignores this Court's plain language in *Borg-Warner* admonishing such a requirement, and the basic principles of medicine and science, which state that it is not currently knowable which fibers in a neoplastic process ultimately cause the cancer. Dr. Hammar explained that in a person with exposure to different asbestos products, one cannot isolate the exposure which was the cause of the mesothelioma:

> Q. Is joint compound an exposure in this case you can say without it he would never have developed mesothelioma?
>
> A. No, I don't think you can do that. I don't think you can do that for probably any exposure that was a legitimate exposure.

11 RR 139.

Georgia-Pacific's expert Dr. Richard Kronenberg concurred that a scientist cannot isolate any one exposure as the sole cause of a person's mesothelioma. 15 RR 222.

In *Borg-Warner*, this Court recognized the scientific impossibility of proving "but for" causation in asbestos cases. Specifically, this Court acknowledged "the proof difficulties accompanying asbestos claims. The long latency period for asbestos-related diseases, coupled with the inability to trace precisely which fibers caused disease and from whose product they emanated, make this process inexact." *Borg-Warner*, 232 S.W.3d at 773, citing *Rutherford v. Owens-Illinios, Inc.*, 16 Cal. 4th 953, 67 Cal. Rptr.2d 16, 941 P.2d 1203, 1219 (Cal. 1997). That the substantial factor test does not incorporate "but for" causation is exemplified by this Court's citation to *Rutherford v. Owens-Illinois, Inc.*, 941 P.2d 1203, 1219 (Cal. 1997). *Rutherford* emphasizes that substantial factor causation does not encompass the scientifically impossible "but for" standard in an asbestos case:

> Plaintiffs cannot be expected to prove the scientifically unknown details of carcinogenesis, or trace the unknowable path of a given asbestos fiber . . . [W]e can bridge this gap in the humanly knowable by holding that plaintiffs may prove causation in asbestos-related cancer cases by demonstrating that the plaintiff's exposure to defendant's asbestos-containing product in reasonable medical probability was a substantial factor in contributing to the aggregate dose of asbestos the plaintiff or decedent inhaled or ingested, and hence to the risk of developing asbestos-related cancer, without the need to demonstrate that the fibers from the defendant's particular product were the ones, or among the ones, that actually produced the malignant growth.[24]

[24] This Court's recognition that "but for" causation is not required in an asbestos case where multiple products may combine to cause a Plaintiff's disease, and where it is unknowable which fiber was "the one" that produced the malignant growth, is affirmed by the RESTATEMENT (THIRD) OF TORTS. The comments to the Restatement explain that factual causation may be satisfied when multiple actors combine together to produce a harm, even when the actions of each individual actor are not sufficient in and of themselves to have caused the harm:

Borg-Warner, 232 S.W.3d at 773, quoting *Rutherford*, 941 P.2d. at 1219 (emphasis added); *see also Jones v. John Crane*, 35 Cal. Rptr. 3d 144, 149 n. 3 (Cal. Ct. App. 2005) (holding that *Rutherford* requires proof that an individual asbestos-containing product is a substantial factor contributing to the plaintiff's risk or probability of developing cancer, but not "but for" causation).

Thus in *Borg-Warner*, this Court recognized the scientific impossibility of proving that asbestos fibers from a particular product were the "but for" nexus for the plaintiff's disease.[25] *See id.* This holding comports with this Court's earlier toxic tort decision in *Merrell Dow Pharmaceuticals v. Havner*, 953 S.W.2d 706, 718 (Tex. 1997). In *Havner*, this Court grappled with the issue of general causation in a toxic tort case, and specifically, whether there was sufficient evidence that the drug Bendectin caused birth defects if ingested during pregnancy. *See id.* at 708. This Court concluded that there is a difference between the "needs of our legal system" and "the limits of science," in that epidemiological studies showing an increase in the risk of developing a disease by studying exposed populations cannot, by definition, pinpoint "the actual cause of a given individual's disease or condition." *Havner*, 953 S.W.3d at 718. This Court determined

---

> Able, Baker, and Charlie, acting independently but simultaneously, each negligently lean on Paul's car, which is parked at a scenic overlook at the edge of the mountain. Their combined force results in the car rolling over the edge of a diminutive curbstone and plummeting down the mountain to its destruction. The force exerted by each of Able, Baker, and Charlie would have been insufficient to propel Paul's car past the curbstone, but the combined force of any two of them is sufficient. Able, Baker, and Charlie are each a factual cause of the destruction of Paul's car.

RESTATEMENT (THIRD) OF TORTS, § 27, cmt f, Illus. 3.

[25] *See also* 63 AM. JUR. 2d *Prods. Liab.* § 27 (2010) ("In concurrent cause situations in which any one concurrent cause operating alone could have produced the harm, however, "but for" causation is not a necessary element of "substantial factor" causation, and the "substantial factor" test is truly a substitute test.")

that the proper balance between the limits of science and the need to show cause-in-fact could be resolved by requiring the plaintiff to prove general causation through epidemiological studies:

> We recognize, as does the federal *Reference Manual on Scientific Evidence*, that a disease or condition either is or is not caused by exposure to a suspected agent and that frequency data, such as the incidence of adverse effects in the general population when exposed, cannot indicate the actual cause of a given individual's disease or condition. But the law must balance the need to compensate those who have been injured by the wrongful action of another with the concept deeply imbedded in our jurisprudence that a defendant cannot be found liable for an injury unless the preponderance of the evidence supports cause in fact. The use of scientifically reliable epidemiological studies and the requirement of more than a doubling of the risk strikes a balance between the needs of our legal system and the limits of science.

Id. (citations omitted).

Therefore, central to this Court's causation jurisprudence is a recognition that in toxic tort cases, where "actual" cause cannot be determined, the Court must strike a balance between the limits of science and the requirement that the preponderance of the evidence supports cause-in-fact. In *Borg-Warner*, this Court struck the balance with respect to specific causation in asbestos cases by holding that the plaintiff must show that the defendant's asbestos product was a "substantial factor" in causing the disease, "without the need to demonstrate that fibers from the defendant's particular product were the ones, or among the ones, that *actually* produced the malignant growth." *Borg-Warner*, 232 S.W.3d at 773, citing *Rutherford v. Owens-Illinois, Inc.*, 941 P.2d 1203, 1219 (Cal. 1997).

2. The substantial factor test is a different test than "but for" causation.

The confusion inherent in the Court of Appeals' analysis stems from a misunderstanding of the distinct differences as between a "but for" analysis and the "substantial factor" test. The Court of Appeals erred in holding that *Borg-Warner* requires proof of "but for" causation in addition to substantial factor causation. *Bostic*, 320 S.W.3d at 597. The substantial factor test is a separate test from "but for" causation. *See Union Pump v. Allbritton*, 898 S.W.2d 773, 776-77 (Tex. 1995), and is not a part of the causation analysis required by this Court in asbestos cases.

As this Court explained in *Union Pump*, the requirement of "substantial factor" stems from the concept of "legal cause," which means that it is not enough to "create a condition" which then gives rise to the injury. *Union Pump*, 898 S.W.2d at 776. The connection between the defendant and the plaintiff's injuries simply may be too attenuated to constitute legal cause. *Lear Siegler, Inc. v. Perez*, 819 S.W.2d 470, 472 (Tex. 1991). "Legal cause is not established if the defendant's conduct or product does no more than furnish the condition that makes the plaintiff's injury possible." *Union Pump*, 898 S.W.2d at 776, quoting *Lear Siegler*, 819 S.W.2d at 472. Thus, in the seminal case *Palsgraf v. Long Island Railroad Co.*, 248 N.Y. 339, 162 N.E. 99 (N.Y. 1928), where a man carrying a package tried to board a train, jumped aboard a car, was assisted by two guards but in the course of which dropped his package, the package fell on the rails and exploded, and the shock of the explosion threw down some scales at the other end of the platform, striking Mrs. Palgraf, the court held that the action of the guards was too remote from the resultant injury to Mrs. Palsgraf to hold that the railroad violated a

duty to her, despite the fact that "but for" the action of the guards, the package would not have fallen and in turn caused the scales to fall on Mrs. Palsgraf. *Id.* at 100. In his dissent, cited in *Union Pump*, Judge Andrews stated that the decision should turn not on duty but on proximate cause: "What we do mean by 'proximate' is that, because of convenience, of public policy, of a rough sense of justice, the law arbitrarily declines to trace a series of events beyond a certain point." *Id.* at 103 (Andrews, J., dissenting).

Thus, in our jurisprudence, it is the substantial factor test that protects against those circumstances where "the defendant's conduct or product does no more than furnish the condition that makes the plaintiff's injury possible," and instead requires that the "defendant's conduct has such an effect in producing the harm as to lead reasonable men to regard it as a cause . . . ." *Union Pump*, 898 S.W.2d at 776, quoting RESTATEMENT (SECOND) OF TORTS § 431 cmt. a (1965); *see also Lear Siegler, Inc. v. Perez*, 819 S.W.2d 470, 472 (Tex. 1991). Section 431 cmt. a of the RESTATEMENT (SECOND) OF TORTS states the same principles as reiterated by this Court in *Union Pump* and *Borg-Warner*: that "substantial factor" requires that the "defendant's conduct has such an effect in producing the harm as to lead reasonable men to regard it as a cause . . . ." *Id.* Therefore, when the RESTATEMENT (SECOND) OF TORTS states that it is "necessary, but it is not of itself sufficient" that "the harm would not have occurred had the actor not been negligent," the authors are making the same distinction as was set forth in *Palsgraf*, *Union Pump*, and *Lear Siegler*: it is not enough to "furnish the condition" that gives rise to the plaintiff's injury; rather, to be a legal cause, it must also be a "substantial factor." The authors of the RESTATEMENT (SECOND) are not stating that the "but for" test is the

same test as substantial contributing factor. Quite the opposite, they are stating that the "substantial factor" test adds additional requirements—a "rough sense of justice"—beyond that found in "but for" causation.

By requiring proof of "substantial factor" causation but not "but for" causation in an asbestos case, this Court has struck a careful balance, as it did in *Havner*, between the limits of science and the requirements of our jurisprudence that the "defendant's conduct has such an effect in producing the harm as to lead reasonable men to regard it as a cause . . . ." *Union Pump*, 898 S.W.2d at 776. That is, this Court requires proof of the "frequency, regularity, and proximity" of the exposure to the asbestos product, as well as the approximate quantum of asbestos fibers from the asbestos product to which the individual was exposed, in order that the jury may determine whether this sufficiently contributed to the individual's aggregate dose of asbestos, such that it could be considered a substantial factor in causing the plaintiff's disease.[26] *Borg-Warner*, 232 S.W.3d at 772. Therefore, when this Court states in *Borg-Warner* that Texas jurisprudence requires more than the *Lorhmann* "frequency, regularity, and proximity" test, and also requires the "substantial factor test," this Court is not adding to asbestos

[26] This Court explains that evidence of substantial factor causation was missing from Mr. Flores' proof: "Thus, while some respirable fibers may be released upon grinding some brake pads, the sparse record here contains no evidence of the approximate quantum of Borg-Warner fibers to which Flores was exposed, and whether this sufficiently contributed to the aggregate dose of asbestos Flores inhaled, such that it could be considered a substantial factor in causing his asbestosis." *Borg-Warner*, 232 S.W.3d at 772, citing *Union Pump*, 898 S.W.2d at 775.

cases the requirement of "but for" causation.[27] *Borg-Warner*, 232 S.W.3d at 770 (quoting *Lohrmann v. Pittsburgh Corning Corp.*, 782 F.2d 1156, 1162 (4th Cir. 1986)).

Instead of recognizing this Court's precedent and the careful balance this Court struck between science and legal causation, the Court of Appeals instead cites to this Court's decision in *Ford Motor Co. v. Ledesma*, 242 S.W.3d 32, 46 (Tex. 2007), in which this Court held producing cause must include "but for" causation in the context of a car wreck case. In such an instance, where there are no scientific barriers to showing the chain of events that started a wreck—e.g. did the rear axle detach before the accident and cause Mr. Ledesma to lose control of his truck—it is necessary to show that there was an unbroken chain in the link of causal events.[28] *Id.* In asbestos cases, however, as is recognized by this Court, one cannot trace the actual fibers producing the asbestos disease. *Borg-Warner*, 232 S.W.3d at 772. Accordingly, the Court of Appeals errs by placing a scientifically impossible burden on plaintiffs in an asbestos case.

---

[27] The RESTATEMENT (THIRD) OF TORTS states that "but for" causation is not required where multiple doses of a toxic agent combine to produce a cancer: "When a person contracts a disease such as cancer, and sues multiple actors claiming that each provided some dose of a toxic substance that caused the disease, the question of the causal role of each defendant's toxic substance arises. Assuming that there is some threshold dose sufficient to cause the disease, the person may be been exposed to doses in excess of the threshold before contracting the disease. Thus, some of the person's exposure may not have been a but-for cause of the disease. Nevertheless, each of the exposures prior to the person contracting the disease . . . is a factual cause of the person's disease . . . . Whether there are some exposures that are sufficiently de minimis that the actor should not be held liable is a matter not of factual causation, but rather of policy . . . ." RESTATEMENT (THIRD) OF TORTS § 27, cmt. g (2002).

[28] The Court of Appeals also cites to the inapposite case *Metro Allied Insurance Agency, Inc. v. Lin*, 304 S.W.3d 830 (Tex. 2009), in which this Court held that in a negligence and Deceptive Trade Practices Act claim for failure to procure insurance, the plaintiff must prove the availability of such insurance in the first instance. *Id.* at 835-836. In *Metro Allied*, like *Ford v. Ledesma*, there were singular alleged harms that could be traced back to a single alleged "but for" act. These cases are inapplicable in the context of an asbestos toxic tort case, where the source of harm cannot be traced to an individual fiber.

3. There is conflict in the courts of appeals as to the interpretation of the Borg-Warner asbestos causation standard.

It is not just this case that has perpetrated confusion with respect to this Court's holding in *Borg-Warner*. Indeed, the continued confusion surrounding this Court's decision in *Borg-Warner* has also created conflicts in the Courts of Appeals, and therefore requires this Court's review. While the Court of Appeals in this case held that causation in an asbestos case requires proof of "but for" causation, other Courts of Appeals have interpreted the *Borg-Warner* causation standard in different, yet still erroneous, ways. In *Georgia-Pacific Corp. v. Stephens*, 239 S.W.3d 304 (Tex. App. - Houston [1st Dist.] 2007, pet. denied), the Houston Court of Appeals held that proof of specific causation must be shown by using epidemiological studies to link the "minimum exposure level (or dosage) of joint compound with a statistically increased risk of developing the disease." *Id.* at 321; *see also Smith v. Kelly-Moore Paint Co., Inc.*, 307 S.W.3d 829 (Tex. App. - Fort Worth 2010, no pet.) (holding that while the plaintiff had satisfied the *Lorhmann* factors that the individual's exposure to the product was frequent, regular, and proximate, the plaintiff had not met its causation burden because the plaintiff did not establish a minimum threshold dose for chrysotile only exposure that would increase one's risk of developing mesothelioma). The *Stephens* court errs by confusing this Court's requirements for general causation in a toxic tort case (e.g. pursuant to *Havner* one must show a doubling of the risk in order to show that the substance was capable of causing the disease in the first instance), with this Court's requirement as set forth in *Borg-Warner* that one can prove substantial contributing factor

by showing that the exposure to the defendant's product "contributes" to the individual's aggregate dose of asbestos. *Borg-Warner*, 232 S.W.3d at 772.

At no point did this Court in *Borg-Warner* hold, as did the Court in *Stephens*, that in order to show substantial contributing factor the plaintiff must amass epidemiology studies broken out on product-by-product basis, with the exposure to each individual product sufficient in and of itself to cause the disease. *Stephens* thus contradicts the holding in *Borg-Warner* that it is sufficient to show that the defendant's product meaningfully contributed to the aggregate dose, without the need to prove that the defendant's product could in and of itself have been the sole cause of the harm. These conflicts in the Courts of Appeals' interpretations of the asbestos causation standard require this Court's review.

B. The Court of Appeals applied the wrong evidentiary standard of review by disregarding all evidence favorable to plaintiff and giving weight only to contradictory evidence elicited by defendant on cross-examination.

The standard of review for no evidence, or legal insufficiency of the evidence, is "improperly applied" if the Court of Appeals fails to affirm jury verdicts that are supported by evidence. *See City of Keller v. Wilson*, 168 S.W.3d 802, 823 (Tex. 2005). "The final test for legal sufficiency must always be whether the evidence at trial would enable reasonable and fair-minded people to reach the verdict under review." *Id.* at 827. The reviewing court is required to credit evidence favorable to the verdict if the jury could do so, and is required to reject evidence contrary to the verdict unless the jury

could not do so. *Id.* The Court of Appeals in *Bostic* quite simply did not follow the appropriate standard of review.

Texas jurisprudence requires that for a "no evidence" point to be sustained, the record must disclose (a) a complete absence of evidence of a vital fact; (b) the court is barred by rules of law or of evidence from giving weight to the only evidence offered to prove a vital fact; (c) the evidence offered to prove a vital fact is no more than a mere scintilla; or (d) the evidence establishes conclusively the opposite of the vital fact. *See City of Keller*, 168 S.W.3d at 810 (quoting Robert W. Calvert, *"No Evidence" and "Insufficient Evidence" Points of Error*, 38 TEX. L. REV. 361, 362-63 (1960)). Neither (a), (b) or (d) apply here. It appears that the Court of Appeals relied on (c)—that the evidence offered to prove a vital fact was no more than a scintilla.

If there is more than a scintilla of evidence, the Court of Appeals has no choice but to overrule the no evidence point and affirm the jury verdict. *See ACS Investors, Inc. v. McLaughlin*, 943 S.W.2d 426, 430 (Tex. 1997) ("Any evidence of probative force supporting a finding requires us to uphold the jury verdict."). Because of Texas' historic respect for jury verdicts, the no evidence standard of review requires the reviewing court to "consider the evidence in the light most favorable to the verdict, and indulge every inference that would support it." *City of Keller*, 168 S.W.3d at 822. "A reviewing court cannot substitute its judgment for that of the trier-of-fact, so long as the evidence falls within this zone of reasonable disagreement." *Id.* at 822. Contrary evidence should be disregarded unless there is no favorable evidence, or the contrary evidence renders the supporting evidence incompetent or conclusively establishes the opposite of the jury's

findings.[29] *Id.* at 810-11. The Court must therefore "credit favorable evidence if reasonable jurors could, and disregard contrary evidence unless reasonable jurors could not." *Id.* at 827. "Jurors are the sole judges of the credibility of the witnesses and the weight to give their testimony." *Id.* at 819. The Court should assume that jurors decided all credibility questions in favor of the verdict if reasonable minds could do so. *Id.* "If the evidence falls within the zone of reasonable disagreement, [the reviewing court] may not invade the fact-finding role of the jurors, who alone determine the credibility of the witnesses, the weight to give to their testimony, and whether to accept or reject all or any part of that testimony." *Hartland*, 290 S.W.3d at 321-22.

Which brings us to our case. In a toxic tort case, proof of causation requires proof of both general causation and specific causation. *See* *Merrill Dow Pharm. v. Havner*, 953 S.W.2d at 714. General causation is whether the substance is capable of causing injury, and specific causation is whether the substance did cause injury to the particular individual. *Id.* Here, Georgia-Pacific did not contest general causation. *Georgia-Pacific Corp. v. Bostic*, 320 S.W.3d 588, 595 (Tex. App. – Dallas 2010). Thus, the question that confronted the Court of Appeals was whether there was sufficient evidence that Georgia-Pacific was a cause of the death of Timothy Bostic.

[29] This Court held that more often than not contrary evidence is discarded in the face of a jury verdict: "As trials normally focus on issues that jurors could decide either way, reviewing courts must disregard evidence contrary to the verdict far more often than they must consider it. Just as no-evidence review that starts by disregarding contrary evidence often must end up considering considerably more, no-evidence review that begins by considering all the evidence must usually end up by considering considerably less. Again, we do not presume to categorize all circumstances in which contrary evidence must be disregarded; a few examples serve to demonstrate that even under the inclusive standard, viewing all the evidence in a light favorable to the verdict often requires that much of it be disregard." *City of Keller*, 168 S.W.3d at 818-819.

In holding that there is "insufficient evidence of Timothy's frequent and regular exposure to Georgia-Pacific's asbestos-containing joint compounds during the relevant time period,"[30] and thus insufficient evidence of causation, the Court of Appeals errs by disregarding the evidence showing Timothy's significant exposure to Georgia-Pacific asbestos joint compound.

The Court of Appeals recognized that Harold Bostic testified to using Georgia-Pacific asbestos joint compound with Timothy "many times" over a ten-year period, and that Timothy's work history shows he was exposed to Georgia-Pacific asbestos joint compound as a co-worker of Harold Bostic and through household exposure.[31] *Bostic*, 320 S.W.3d at 600. Nonetheless, in contradiction to the "no evidence" principles set forth by this Court, the Court of Appeals does not view the evidence in a light most favorable to Plaintiffs, and instead chooses to credit competing evidence that the Court of Appeals states "belies an assertion of exposure occurring 'many times.'" *Id.* at 599. By so doing, the Court of Appeals does not apply the proper evidentiary standard of review. Without explanation, the Court of Appeals summarily states: "[o]n this record, there is insufficient evidence of Timothy's frequent and regular exposure to Georgia-Pacific's asbestos-containing joint compound during the relevant time period." *Id.* Presumably, the Court of Appeals is giving great deference to the points elicited by Georgia-Pacific on cross-examination of Harold Bostic, in which Harold was pressed to recall the specific part-time jobs on which he used Georgia-Pacific

[30] *Bostic*, 320 S.W.3d at 600.

[31] The Court of Appeals does not cite at all to the testimony of Timothy Bostic, in which he describes working as a child and "his whole life" with his father doing joint compound work. *See supra* at Section II.C.

with Timothy over forty years ago. *Id.* at 593. What the Court of Appeals discredits entirely is Harold Bostic's testimony that in his lifetime of work as a handyman, he used Georgia-Pacific asbestos joint compound with Timothy for 98 percent of the time, or more, and that between the time that Timothy was five years old, to 15 or 16 years old, he used Georgia-Pacific asbestos joint compound on a continual basis and "many, many times." 12 RR 39; 137. Timothy testified that he worked around asbestos joint compound with his father his "whole life." 7 RR 178. Harold testified that he "always had an extra job working for the family," and that he "worked about six hours a day after my regular job." 12 RR 22-23. Given that Harold testified that 98 percent of that time he used Georgia-Pacific asbestos joint compound, and that he worked with Timothy on a continual basis, the reasonable inference to be made is that during the ten year period from 1967 to 1977, Timothy was exposed to asbestos from Georgia-Pacific joint compound on a regular, frequent, and proximate basis.

The Court of Appeals erroneously places great weight on the fact that at the time of trial, nearly forty years after working on these projects, Harold Bostic was able to recall the names of only eight construction projects that he worked on between 1967 to 1977. *Bostic*, 320 S.W.3d at 593-94. The Court of Appeals therefore adopts Georgia-Pacific's argument that these must have been the only projects upon which Harold Bostic worked with his son Timothy during this time period, thereby limiting Timothy Bostic's exposure to Georgia-Pacific asbestos joint compound. *Id.* In a clear violation of the admonitions of this Court in *City of Keller*, that it is the province of the jury to resolve all conflicts in the evidence, and that the Court of Appeals must assume that jurors resolved

all conflicts in accordance with the verdict,[32] the Court of Appeals reverses the applicable standard by resolving all conflicts in favor of Georgia-Pacific, and disregarding evidence favorable to the verdict. Following are the conflicts in testimony that the Court of Appeals erroneously resolves in favor of Georgia-Pacific:

- The Court of Appeals concludes that Harold Bostic only worked on one remodeling job at a time, with each job taking a "lengthy period of time to complete." *Bostic*, 320, S.W.3d at 593. This conclusion ignores the clear contradictory testimony of Harold Bostic, who states that he would not work on one job at a time, and that there were side jobs and emergencies that came up "constantly" and "every day." 12 RR 83-84.

- The Court of Appeals incorrectly states that only "three projects" involved joint compound work. *Bostic*, 320 S.W.3d at 593. In fact, Harold Bostic testified that of the eight projects he recalled, he performed joint compound work on at least seven of them, and he was unsure as to the eighth. 12 RR 122 (joint compound used on "prefab" house); 12 RR 126-27 (joint compound used on utility room and cracks throughout family home); 12 RR 81 ("everything inside was drywalled" in the service station); 12 RR 92 (drywall "from one end to the other" in his sister's older house); 12 RR 117 (patching work with joint compound at his mother's house); 12 RR 117 (the "whole thing was drywalled" in the bathroom his brother's house); 12 RR 81 (did drywall work building garage and living quarters for a friend); 12 RR 90-91 (cannot remember if he did joint compound work at his sister's new house).

- The Court of Appeals concludes that Timothy Bostic's direct and bystander exposure to Georgia-Pacific asbestos joint compound was "limited," and that there was only one project on which Harold Bostic used Georgia-Pacific. *Bostic*, 320 S.W.3d at 593. This contradicts Harold Bostic's testimony that "[f]rom the time I started with [Timothy] until he wasn't able to work anymore, we used Georgia-Pacific for the simple reason it's good,"[33] and that he used Georgia-Pacific asbestos joint compound 98 percent of the time, "or more." 12 RR 39.

[32] *City of Keller*, 168 S.W.3d at 819-820.

[33] 12 RR 135.

- The Court of Appeals concludes that the only jobs that Harold worked with Timothy were the jobs that he was able to recall at trial, when in fact Harold testified that there was no doubt in his mind that he worked on other jobs, and that he was simply having trouble recalling all of them over thirty years later. 12 RR 136-37. The Court of Appeals ignores Harold's testimony that "old age has caught up" with him,[34] and he "can't remember 35 years ago,"[35] but that Harold was certain that he worked on more places than those he was able to recall at the time of trial 12 RR 136.

- The Court of Appeals infers that if Timothy was merely present with Harold Bostic on a project, and not specifically performing drywall work, that he would not have been exposed to asbestos joint compound, and therefore there were only "three" jobs on which Timothy may have been exposed. *Bostic*, 320 S.W.3d at 593-94. This is contradicted by the evidence in this case, which shows that because the asbestos in joint compound is not encapsulated, and instead becomes airborne by means of mixing, sanding, and clean-up, **bystanders** are exposed to the asbestos. PX-26 ("Fibers were detected in adjacent rooms during mixing operations and it was reported that . . . 'significant concentrations of asbestos remained suspended and could pervade living quarters for a considerable duration of time . . .' [T]he use of spackling and other patching compounds (in mixing, sanding, and cleanup operations) may expose the user and other members of the household to 'significant concentrations of asbestos.'"). The make-up of joint compound dictates that the dust will dissipate and "scatter" upon application and clean-up. 10 RR 101, 103-105.

- The Court of Appeals incorrectly limits the drywall work in the house which Timothy Bostic lived with his father Harold to one instance—"a utility room" when Timothy was four or five years old[36]—when in fact Harold testified that the sheetrock "cracked solid all over" the house, and "they all had to be repaired." 12 RR 115, 131.

- The Court of Appeals accepts unequivocally Georgia-Pacific's argument that if Harold Bostic states that he "could not recall" Timothy "working with drywall" that Timothy was not exposed to asbestos joint compound, and therefore there were only "three" projects on which he may have been exposed. *Bostic*, 320 S.W.3d at 593-94. Harold states

[34] 12 RR 115.

[35] 12 RR 131.

[36] *Bostic*, 320 S.W.3d at 593.

that because his memory cannot almost forty years later place Timothy at a precise place and time, it would be incorrect to conclude that Timothy was not there by his side, as was the normal practice: "I don't think I ever said that he didn't or did work on some place. He could have worked on all of them. He could have worked on half of them. I never said that he did or didn't that I recall, that I say he did or didn't." 12 RR 131.

- The Court of Appeals states that Harold Bostic did no joint compound work in his mother's house, which is incorrect. *Bostic*, 320 S.W.3d at 594. In fact, Harold Bostic testified that there were cracks that he would have to "patch," but that he did not do "drywall projects" where he "installed sheetrock." 12 RR 117. Here, the Court of Appeals confuses the fact that hanging sheetrock (drywall) is not the only process by which joint compound was used, and that it is also used for patching. PX 26 at 38790 (App. P).

- The Court of Appeals states with skepticism that Timothy was "four or five years" of age at the time that his father allowed him to mud or sand with him at the family home, thus adopting Georgia-Pacific's argument that he was too young to have meaningfully participated in his father's work. *Bostic*, 320 S.W.3d at 593. This is contradicted by Georgia-Pacific's marketing materials, which depict a father and young toddler working with joint compound together,[37] as well as the testimony of Timothy and Harold Bostic.[38]

The Court of Appeals errs in viewing the evidence in a light most favorable to Georgia-Pacific, rather than viewing Harold Bostic's testimony in a light most favorable to Plaintiffs. The jury found that Georgia-Pacific was 75% responsible, and clearly did not believe Georgia-Pacific's argument that the eight jobs that Harold was able to recall by name were the only jobs that he and Timothy worked on. Instead of following the requisite "no evidence" standard of review, the Court of Appeals instead finds that the

[37] PX-17 (App. P).

[38] *See supra* Section II.C.

evidence "belies" that Harold Bostic worked with Georgia-Pacific joint compound "many, many, many times" with Timothy. *Bostic*, 320 S.W.3d at 599.

The Court of Appeals, in discrediting all the evidence above, and in applying an incorrect standard of review, then compounds its error by refusing to acknowledge Dr. Hammar's testimony that Timothy's exposure to asbestos joint compound was sufficient in and of itself to cause his mesothelioma:

> Q. Was Timothy Bostic exposed at high enough levels, to your knowledge, in doing this drywall work, in mixing, sanding, and cleaning up of drywall materials sufficient to cause the disease mesothelioma?
> A. Yes.

11 RR 49.

Instead, the Court of Appeals insists, contrary to the evidence, that Plaintiffs proved substantial factor causation based on the "each and every exposure" theory. *Bostic*, 320 S.W.3d at 599.

The standard of review is not what is more reasonable in the view of the Court of Appeals, but it is only whether there is any probative evidence that "would enable reasonable and fair-minded people to reach the verdict under review." *City of Keller*, 168 S.W.3d at 827. The Court of Appeals misapplied the standard of no evidence review by failing to consider legally sufficient evidence. Because there is legally sufficient evidence from which the jury could determine that it was more likely than not that Georgia-Pacific was a cause of Timothy Bostic's death, this Court should grant review and reverse the Court of Appeals' judgment.

C. The Court of Appeals failed to apply this Court's qualification that the "frequency, regularity, and proximity" test may differ depending on the type of disease and product.

The Court of Appeals also ignores this Court's qualification that proof of causation, and hence the amount of frequency, proximity, and duration of exposure, may differ depending on the product at issue and the disease at issue, and thereby applies too high a burden to Plaintiffs. First, this Court recognized that "it is generally accepted that one may develop mesothelioma [in contrast to asbestosis] from low levels of asbestos exposure." *Borg-Warner*, 232 S.W.3d at 771. This is confirmed by the record in this case. Dr. Arnold Brody, professor of cell biology at Tulane University Medical School, testified: "[T]here's no safe level for mesothelioma. In other words, no one's ever been able to show a level that will prevent everyone from getting mesothelioma. Now, you can do that for asbestosis, and you can get pretty close probably for most lung cancer cases, but for mesothelioma, no one's ever shown a safe level." 4 RR 92. Georgia-Pacific's expert in internal medicine and pulmonary disease, Dr. Richard Kronenberg, testified that mesothelioma, in contrast to asbestosis, requires lower levels of asbestos exposure to cause the disease. 15 RR 189. Further, every expert, including Georgia-Pacific's experts agreed that children are more susceptible to disease from exposure to toxic substances. 4 RR 149-50; 5 RR 101; 14 RR 29-30; 13 RR 216.

The Court of Appeals errs by not recognizing that extremely low levels of exposure to asbestos can cause mesothelioma, and therefore in order to meet the legal standard of frequent, proximate, and regular exposure, the causation standard is somewhat less rigid. *See Tragarz v. Keene Corp*, 980 F.2d 411, 421 (7th Cir. 1993)

(holding that the frequency, regularity, and proximity test becomes "even less rigid" when dealing with mesothelioma, which can develop after only minor exposures to asbestos fibers).

The Court of Appeals also does not recognize, as does this Court in *Borg-Warner*, that the nature of the asbestos product will change the analysis required for proof of causation. *Borg-Warner*, 232 S.W.3d at 773. In *Borg-Warner*, the asbestos fibers were embedded in brake pads, and often "destroyed by the heat of friction and therefore [are] not released to the public as asbestos fiber." *Id.* at 767. This Court cautioned that proof of exposure may differ where a friable product is at issue: "We note too, that proof of causation may differ depending on the product at issue; '[i]n some products, the asbestos is embedded and fibers are not likely to become loose or airborne, [while] [i]n other products, the asbestos is friable.'" *Id.* at 773 (citations omitted). Asbestos fibers in joint compound are neither embedded nor "destroyed" by the heat of friction. On the contrary, the CPSC stated that asbestos in joint compound is "free-form" asbestos that is not "bound, woven, or otherwise 'locked in' to a product by resins or other bonding agents, or those from which fibers can readily become airborne with any reasonably foreseeable use." PX 26 at 38790 (App. P). The Court of Appeals, in rejecting Plaintiffs' evidence of frequent, proximate, and regular exposure in favor of some unknown, unattainable standard, errs by failing to consider the extremely friable nature of the individual product at issue in this case.

D. The Court of Appeals erred in holding that this Court requires Plaintiffs to calculate the dose of asbestos inhaled by Timothy Bostic.

Finally, the Court of Appeals errs by holding that "appellees' evidence is insufficient to provide quantitative evidence of Timothy's exposure to asbestos fibers from Georgia-Pacific's asbestos-containing joint compound . . ." *Bostic*, 320 S.W.3d at 601. *Borg-Warner* states that the plaintiff, in proving substantial factor causation, must show "defendant-specific evidence relating to the approximate dose to which the plaintiff was exposed," which "need not be reduced to mathematical precision." *Borg-Warner*, 232 S.W.3d at 773. In interpreting this standard, the Court of Appeals disregards Dr. Longo's approximate quantum of the asbestos fibers released from Georgia-Pacific joint compound, by stating that he failed to establish a "dose" for Timothy. *Bostic*, 320 S.W.3d at 601. Specifically, Dr. Longo testified that while he measured the release of asbestos fibers from Georgia-Pacific asbestos joint compound while performing the same mixing, sanding, and clean-up tasks that exposed Timothy Bostic to asbestos, it would be scientifically impossible for him to recreate Timothy Bostic's exposure without having performed contemporaneous measurements at the time. 10 RR 73; 10 RR 106. Because Dr. Longo testified that it would be scientifically impossible for him to calculate the precise dose of asbestos that Timothy Bostic inhaled, the Court of Appeals held that "Dr. Longo's testimony regarding the results of his material practice simulation studies do not quantify Timothy's exposure to asbestos fibers from Georgia-Pacific's asbestos-containing joint compound." *Bostic*, 320 S.W.3d at 601. Therefore, lacking an exact

"dose" of the airborne fibers which Timothy inhaled, the Court of Appeals found no evidence of quantification. *See id.*

At the outset, the Court of Appeals again violates basic principles of science—here require time travel to measure the dose of asbestos from Georgia-Pacific's joint compound that Timothy Bostic inhaled. The absolute injustice created by this standard requires this Court to grant review of this case. Indeed, the importance of this issue to the state of Texas is exemplified by the fact that the Texas Senate, in response to the *Borg-Warner* decision, introduced and passed Senate Bill 1123, eliminating the requirement of "numerical dose, approximate or otherwise, of asbestos fibers to which the claimant was exposed that are attributable to defendant. . . ."[39] Tex. S.B. 1123, 81st Leg., R.S. (2009) (App. E); *see also* S.J. of Tex., 81st Leg., R.S., at 1170-71 (2009) (Third Reading of S.B. 1123 Before the S. Comm. on State Affairs) (App. J). The impossibility of this draconian interpretation of *Borg-Warner*, which negates the possibility of ever meeting causation in an asbestos case, has been recognized in the FEDERAL REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, which states: "Human exposure occurs most frequently in occupational settings where workers are exposed to industrial chemicals like lead or asbestos; however, even under these circumstances, it is usually difficult, if not impossible, to quantify the amount of exposure." Bernard D. Goldstein and Mary Sue Henifin, *Reference Guide on Toxicology*, *in* FEDERAL REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 403, 405 (2d ed. 2000). (App. O).

[39] S.B. 1123 was introduced as H.B. 1811 by Representative Eiland. H.B. 1811 did not get out of committee, and therefore S.B. 1123 and H.B. 1811 did not become law.

1. Plaintiffs calculated an approximate quantum of the dose from Georgia-Pacific asbestos joint compound.

Here, Dr. William Longo tested the amount of asbestos fibers released from Georgia-Pacific dry and pre-mixed joint compound while doing the same tasks as performed by Timothy Bostic—mixing, sanding, and sweeping of Georgia-Pacific asbestos joint compound. 10 RR 73. Dr. Longo's tests of the Georgia-Pacific asbestos joint compounds demonstrated that persons who mixed, sanded, and cleaned-up Georgia-Pacific asbestos joint compound were exposed to levels of asbestos many times greater than the current OSHA permissible exposure limit of 0.1 fiber cc,[40] and thousands of time higher than average background of asbestos in the air of 0.0005 fibers per cc.[41] 10 RR 136; 95. Dr. Longo measured a range of 2.7 to 6.6 fibers per cc when sanding and 4.7 fibers per cc when cleaning-up the Georgia-Pacific Ready-Mix joint compound. 10 RR 84. For the study on the dry bag of asbestos, Dr. Longo measured 1.6 fibers per cc when mixing, 1.5 fibers per cc when sanding, and 1.4 fibers per cc when cleaning-up.[42] 10 RR 87. In addition, Dr. Longo testified that dumping a half a bag of joint compound released asbestos levels of 25 to 50 fibers per cc. 10 RR 112 Dr. Longo calculated that in a twenty-five pound bag of Georgia-Pacific joint compound that contained five percent asbestos, there would be 567,500,000 micrograms of chrysotile per bag, which equals

[40] In 1972, the OSHA permissible exposure level to asbestos was 5 fibers per cubic centimeter for an eight hour time-weighted average. 10 RR 136. OSHA lowered the asbestos permissible exposure level to 2 fibers per cc in 1976. 10 RR 138. The current OSHA asbestos permissible exposure level is .1 fiber per cc. 10 RR 136.

[41] The EPA determined that the average background content of asbestos in the air is .0005 fibers per cc. 10 RR 95.

[42] The measurements of the dry bag of asbestos were lower than the Ready-Mix, because Dr. Longo only measured nine linear feet of product from the dry bag. 10 RR 87. In other words, the less product that is used, the less asbestos dust will be released into the air.

11.4 quadrillion chrysotile fibers. 10 RR 108-10. In the Ready-Mix study, Dr. Longo measured 16 billion asbestos structures on the clothing of the worker who sanded Georgia-Pacific asbestos Ready-Mix joint compound. 10 RR 239-40.

Dr. Longo's quantification of the asbestos fibers released from Georgia-Pacific asbestos joint compound is supported by the measurements taken by the Texas State Department of Health, the Gypsum Association, and the peer-reviewed, published literature. A Texas State Department of Health Survey of the Georgia-Pacific Acme, Texas plant showed that stacking bags of asbestos joint compound released 13.7 fibers per cubic foot of asbestos. PX-12. The Gypsum Association, of which Georgia-Pacific was a member, measured exposure levels from dry mixing, sanding, and sweeping asbestos joint compounds that exceeded the 1972 OSHA permissible excursion limits of 10 fibers per cc. 6 RR 25-26. For example, in one instance, sanding joint compound for thirty minutes released asbestos fiber levels of almost 40 fibers per cc. 6 RR 26. The peer-reviewed, published literature shows that exposures to asbestos from joint compound work is comparable to the asbestos exposures of asbestos insulators, with a mean exposure to asbestos of 10 fibers per cc.[43] 5 RR 129, 139-40.

2. The facts of this case are vastly different from those of *Borg-Warner*.

The facts presented by this case are inapposite from the exposure evidence that the Texas Supreme Court found insufficient in *Borg-Warner*. In *Borg-Warner*, the Plaintiff worked as a brake mechanic for thirty-five years, performing brake jobs with numerous

[43] *See supra* at note 15.

different brands of brake pads. *Borg-Warner*, 232 S.W.3. at 765. He worked with Borg-Warner brake pads for only three of those thirty-five years, from 1972-75. *See id.* In contrast, Timothy Bostic worked with Georgia-Pacific asbestos joint compound "98 percent of the time" if not more, for ten years. 12 RR 39. In *Borg-Warner*, Plaintiff's expert testified that "most of the asbestos in brake linings is destroyed by the heat of friction and therefore is not released to the public air as asbestos fiber." *Id.* at 767. In contrast, the evidence in this case is that the asbestos fibers were not destroyed by use or application, but rather were released many hundreds of times above background. 10 RR 136; 95. In *Borg-Warner*, no scientist provided testimony as to the properties of the asbestos products at issue, such as their ability to release respirable fibers. *Id.* Indeed, neither of the two experts in *Borg-Warner* had researched the Borg-Warner products or had any specific knowledge about them. *See id.* at 768. Here, Plaintiffs entered quantifiable evidence from a Materials Analytic Scientist who had measured the release of respirable asbestos fibers from the very products at issue. 10 RR 84-87. In *Borg-Warner*, the asbestos at issue was "embedded in the brake pads." *Id.* at 774. Here, asbestos in the joint compound was not encapsulated, as in gaskets or brakes, but was in loose powder form or released through sanding. 10 RR 101, 103-105.

Dr. Longo's testimony with respect to the approximate quantum of respirable fibers released from Georgia-Pacific asbestos joint compound, coupled with the evidence that Timothy Bostic was exposed to Georgia-Pacific asbestos joint compound continuously for ten years, does not equate to the problematic "indeterminate amount" that may have originated with Borg-Warner products. On the contrary, this evidence

satisfies this Court's substantial factor requirement that the Plaintiffs provide "[d]efendant-specific evidence relating to the approximate dose to which plaintiff was exposed," which "need not be reduced to mathematical precision." *Borg-Warner*, 232 S.W.3d at 773. The Court of Appeals errs in holding that Plaintiffs failed to satisfy *Borg-Warner*'s substantial factor requirements, because Dr. Longo testified that it would be a scientific impossibility to recreate a plaintiff's exact asbestos inhalations without having taken contemporaneous measurements at the time of exposure.[44] *Bostic*, 320 S.W.3d at 601. Here, as set forth at length above, Plaintiffs quantified the frequency, regularity, and proximity of Timothy Bostic's exposure to Georgia-Pacific asbestos joint compound not only by quantifying the ratio of Timothy Bostic's exposure to Georgia-Pacific asbestos joint compound as compared to his other exposures (ten years of Georgia-Pacific asbestos joint compound versus three months of exposure at Knox Glass, six months at Palestine Contractors, potential household exposure, and sporadic brake work), but also by actually testing the products at issue and measuring asbestos levels multiple times in excess of OSHA permissible exposure limits and thousands of times above background exposure to asbestos.

3. Confusion over approximate quantum has led to a conflict in the Courts of Appeal.

The lower courts' confusion over the approximate quantum requirements of *Borg-Warner* has created a conflict in the Courts of Appeals. Specifically, while in this case the Court of Appeals held that any evidence of dose absent specific measurements of the

[44] 10 RR 73-74.

plaintiff's actual inhalation of asbestos do not satisfy the *Borg-Warner* standard,[45] the Fort Worth Court of Appeals held the opposite in *Smith v. Kelly-Moore Paint Co., Inc.*, 307 S.W.3d 829 (Tex. App. - Fort Worth 2010, no pet.). In *Smith*, the Court of Appeals held that Dr. Longo's testimony with respect to fibers released from asbestos joint compound "raised a genuine issue of material fact as to the aggregate dose of Kelly-Moore asbestos-containing joint compound." *Id.* at 836. This conflict in the Courts of Appeal requires that this Court grant review, and clarify the requirements for substantial factor causation in an asbestos case.

V. PRAYER

This case raises serious, widespread issues that require resolution by this Court. For the reasons set forth above, Plaintiffs pray that this Court grant review, clarify the asbestos substantial factor causation standard, and reverse the decision of the Court of Appeals, and for such other relief for which Plaintiffs may be entitled.

[45] *See Bostic*, 320 S.W.3d at 597.

Respectfully submitted,

BARON & BUDD, P.C.

By: /s/ Denyse F. Clancy
Denyse F. Clancy, Esq. (SBN 24012425)
dclancy@baronbudd.com
John Langdoc, Esq. (SBN 24044583)
jlangdoc@baronbudd.com
3102 Oak Lawn Avenue, Suite 1100
Dallas, TX 75219
(214) 521-3605: Telephone
(214) 520-1181: Facsimile

ATTORNEYS FOR PETITIONERS

CERTIFICATE OF SERVICE

I certify that pursuant to the Texas Rules of Civil Procedure, I have served a true copy of the foregoing Petitioners Brief on the Merits electronically on June 29, 2011:

Deborah G. Hankinson
Rick Thompson
Hankinson Levinger LLP
750 N. St. Paul Street, Suite 1800
Dallas, Texas 75201

/s/ Denyse F. Clancy
Denyse Clancy

TAB A

NO. CC-03-01977-A

SUSAN ELAINE BOSTIC, Individually and as Personal Representative of the Heirs and Estate of TIMOTHY SHAWN BOSTIC, Deceased; HELEN DONNAHOE; and KYLE ANTHONY BOSTIC,	§	IN THE COUNTY COURT
Plaintiffs,	§	AT LAW # 1
VS.	§	
GEORGIA-PACIFIC CORPORATION,	§	
Defendant.	§	DALLAS COUNTY, TEXAS

FIRST AMENDED FINAL JUDGMENT

CAME ON FOR TRIAL BY JURY in the County Court at Law No. 3 for Dallas County, Texas, the claims of Plaintiffs **SUSAN ELAINE BOSTIC, Individually and as Personal Representative of the Heirs and Estate of TIMOTHY SHAWN BOSTIC, Deceased; HELEN DONNAHOE;** and **KYLE ANTHONY BOSTIC** against Defendant **GEORGIA-PACIFIC CORPORATION**. All claims of these Plaintiffs against all other Defendants have been severed or settled and dismissed before verdict.

After a jury was impaneled and sworn, it heard the evidence and arguments of counsel. In response to the jury charge, the jury made findings that the Court received, filed, and entered of record. The questions submitted to the jury and the jury's findings are attached as Exhibit 1 and incorporated herein by reference. After due deliberation, the jury returned a verdict awarding a total of $7,554,907.00 in compensatory damages and $6,038,910.00 in exemplary damages on or about June 8, 2006. The case was transferred to this Court on August 10, 2006. Plaintiffs filed a motion for judgment on the verdict.

The Court hereby RENDERS judgment for Plaintiffs as against Defendant GEORGIA-PACIFIC CORPORATION.

Based on the verdict of the jury, the Court's rulings during trial, the applicable law, and taking into account the prior settlements received by Plaintiffs it is

ORDERED, ADJUDGED and DECREED:

WITH REGARD TO COMPENSATORY DAMAGES:

1. That Plaintiff **SUSAN ELAINE BOSTIC**, as Personal Representative of the Estate of **TIMOTHY SHAWN BOSTIC**, shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after an offset for settlements in the amount of $275,994.12 calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), compensatory damages in the amount of **$1,240,005.88.**

2. That Plaintiff **SUSAN ELAINE BOSTIC**, Individually, shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after an offset for settlements in the amount of $219,863.33 calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), compensatory damages in the amount of **$2,799,591.67.**

3. That Plaintiff **KYLE ANTHONY BOSTIC** shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after an offset for settlements in the amount of $164,809.43 calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), compensatory damages in the amount of **$1,646,860.57.**

4. That Plaintiff **HELEN DONNAHOE** shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after an offset for settlements in the amount of $110,104.80 calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), compensatory damages in the amount of **$1,097,677.20.**

WITH REGARD TO PUNITIVE DAMAGES:

5. That Plaintiff **SUSAN ELAINE BOSTIC**, Individually, shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION** punitive damages in the amount of **$3,019,455.00**.

6. That Plaintiff **KYLE ANTHONY BOSTIC** shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION** punitive damages in the amount of **$1,811,673.00**.

WITH REGARD TO PREJUDGMENT INTEREST:

7. That Plaintiff **SUSAN ELAINE BOSTIC**, as Personal Representative of the Estate of **TIMOTHY SHAWN BOSTIC**, shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after offsets for settlements calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), prejudgment interest on past damages pursuant to TEX. FIN. CODE ANN. Ch. 304 at the rate of FIVE PERCENT (5.0%) per annum, simple, already accrued from February 19, 2003 (the day this lawsuit was filed) through October 21, 2008 (the day before this judgment was signed) in the amount of **$183,122.97**.

8. That Plaintiff **SUSAN ELAINE BOSTIC**, Individually, shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after offsets for settlements calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), prejudgment interest on past damages pursuant to TEX. FIN. CODE ANN. Ch. 304 at the rate of FIVE PERCENT (5.0%) per annum, simple, already accrued from February 19, 2003 (the day this lawsuit was filed) through October 21, 2008 (the day before this judgment was signed) in the amount of **$145,894.95**.

9. That Plaintiff **KYLE ANTHONY BOSTIC** shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after offsets for settlements calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), prejudgment interest on past damages pursuant

to TEX. FIN. CODE ANN. Ch. 304 at the rate of FIVE PERCENT (5.0%) per annum, simple, already accrued from February 19, 2003 (the day this lawsuit was filed) through October 21, 2008 (the day before this judgment was signed) in the amount of **$109,434.00**.

10. That Plaintiff **HELEN DONNAHOE** shall have and recover from Defendant **GEORGIA-PACIFIC CORPORATION**, after offsets for settlements calculated pursuant to *Battaglia v. Alexander*, 177 S.W.3d 893 (Tex. 2005), prejudgment interest on past damages pursuant to TEX. FIN. CODE ANN. Ch. 304 at the rate of FIVE PERCENT (5.0%) per annum, simple, already accrued from February 19, 2003 (the day this lawsuit was filed) through October 21, 2008 (the day before this judgment was signed) in the amount of **$72,921.91**.

AND IT IS FURTHER ORDERED:

11. That post-judgment interest on all amounts owed by Defendant **GEORGIA-PACIFIC CORPORATION** to Plaintiffs shall accrue at the rate of FIVE PERCENT (5.0%) per annum, compounded annually, from the day this Judgment is signed until satisfaction of Judgment, pursuant to TEX. FIN. CODE ANN. Ch. 304.

13. That costs of suit shall be taxed against Defendant **GEORGIA-PACIFIC CORPORATION**, and that Plaintiffs are entitled to post-judgment interest on such court costs at the rate of FIVE PERCENT (5.0%) per annum, compounded annually, pursuant to TEX. FIN. CODE §§ 304.003(a), 304.006.

14. This judgment is final, disposes of all claims and all parties, and is appealable.

The Court orders execution to issue for this judgment.

SIGNED this 22nd day of October, 2008.

THE HONORABLE JUDGE BENSON PRESIDING

APPROVED AS TO FORM AND SUBSTANCE:

DENYSE CLANCY
State Bar No. 24012425
JED J. BORGHEI
State Bar No. 24059473

ATTORNEYS FOR PLAINTIFFS

BARON & BUDD, P.C.
3102 Oak Lawn, Suite 1100
Dallas, Texas 75219
214-521-3605 (telephone)
214-520-1181 (facsimile)

APPROVED AS TO FORM ONLY:

DEBORAH G. HANKINSON
State Bar No. 00000020
RICK THOMPSON
State Bar No. 00788537

ATTORNEYS FOR DEFENDANT GEORGIA-PACIFIC CORPORATION

HANKINSON LEVINGER LLP
2305 Cedar Springs Road, Suite 230
Dallas, Texas 75201
214-754-9190 (telephone)
214-754-9140 (facsimile)

NO. CC-03-01977-C

SUSAN ELAINE BOSTIC, Individually and as Personal Representative of the Heirs and Estate of TIMOTHY SHAWN BOSTIC, Deceased; HELEN DONNAHOE; and KYLE ANTHONY BOSTIC,	§	IN THE COUNTY COURT
Plaintiffs,	§	AT LAW # 3
VS.	§	
GEORGIA-PACIFIC CORPORATION,	§	
Defendants.	§	
	§	DALLAS COUNTY, TEXAS

COURT'S JURY INSTRUCTIONS

LADIES AND GENTLEMEN OF THE JURY:

This case is submitted to you by asking questions about the facts, which you must decide from the evidence you have heard in this trial. You are the sole judges of the credibility of the witnesses and the weight to be given their testimony, but in matters of law, you must be governed by the instructions in this charge. In discharging your responsibility on this jury, you will observe all the instructions which have previously been given you. I shall now give you additional instructions which you should carefully and strictly follow during your deliberations.

1. Do not let bias, prejudice or sympathy play any part in your deliberations.

2. In arriving at your answers, consider only the evidence introduced here under oath and such exhibits, if any, as have been introduced for your consideration under the rulings of the Court, that is, what you have seen and heard in this courtroom, together with the law as given you by the Court. In your deliberations, you will not consider or discuss what is not represented by the evidence in this case.

EXHIBIT
1

3. Since every answer that is required by the charge is important, no juror should state or consider that any required answer is not important.

4. You must not decide who you think should win, and then try to answer the questions accordingly. Simply answer the questions, and do not discuss nor concern yourselves with the effect of your answers.

5. You will not decide the answer to a question by lot or by drawing straws, or by any other method of chance. Do not return a quotient verdict. A quotient verdict means that the jurors agree to abide by the result to be reached by adding together each juror's figures and dividing by the number of jurors to get an average. Do not do any trading on your answers; that is, one juror should not agree to answer a certain question one way if others will agree to answer another question another way.

6. You may render your verdict upon the vote of five or more members of the jury. The same five or more of you must agree upon all of the answers made and to the entire verdict. You will not, therefore, enter into an agreement to be bound by a majority or any other vote of less than five jurors. If the verdict and all of the answers therein are reached by unanimous agreement, the presiding juror shall sign the verdict for the entire jury. If any juror disagrees as to any answer made by the verdict, those jurors who agree to all findings shall each sign the verdict.

These instructions are given you because your conduct is subject to review the same as that of the witnesses, parties, attorneys and the judge. If it should be found that you have disregarded any of these instructions, it will be jury misconduct and it may require another trial by another jury; then all of our time will have been wasted.

The presiding juror or any other who observes a violation of the court's instructions shall immediately warn the one who is violating the same and caution the juror not to do so again.

When words are used in this charge in a sense that varies from the meaning commonly understood, you are given a proper legal definition, which you are bound to accept in place of any other meaning.

Answer "Yes" or "No" to all questions unless otherwise instructed. A "Yes" answer must be based on a preponderance of the evidence unless otherwise instructed. If you do not find that a preponderance of the evidence supports a "Yes" answer, then answer "No." The term "preponderance of the evidence" means the greater weight and degree of credible evidence admitted in this case. Whenever a question requires an answer other than "Yes" or "No," your answer must be based on a preponderance of the evidence unless otherwise instructed.

A fact may be established by direct evidence or by circumstantial evidence or both. A fact is established by direct evidence when proved by documentary evidence or by witnesses who saw the act done or heard the words spoken. A fact is established by circumstantial evidence when it may be fairly and reasonably inferred from other facts proved.

"**NEGLIGENCE**" means failure to use ordinary care, that is, failing to do that which a person or entity of ordinary prudence would have done under the same or similar circumstances or doing that which a person or entity of ordinary prudence would not have done under the same or similar circumstances.

"**ORDINARY CARE**" means that degree of care that would be used by a person or entity of ordinary prudence under the same or similar circumstances.

"**PROXIMATE CAUSE**" means that cause which, in a natural and continuous sequence, produces an event, and without which cause such event would not have occurred. In order to be a proximate cause, the act or omission complained of must be such that a person or entity using ordinary

care would have foreseen that the event, or some similar event, might reasonably result therefrom. There may be more than one proximate cause of an event.

"SOLE PROXIMATE CAUSE." There may be more than one proximate cause of an event, but if an act or omission of any person not a party to the suit was the "sole proximate cause" of an occurrence, then no act or omission of any other person could have been a proximate cause.

"PRODUCING CAUSE" means an efficient, exciting, or contributing cause that, in a natural sequence, produces the injury. There may be more than one producing cause.

QUESTION NO. 1:

Did the negligence, if any, of those named below proximately cause the asbestos-related injury, if ny, to TIMOTHY SHAWN BOSTIC that resulted in his death?

Answer "YES" or "NO."	YES	NO
Allied-Signal	___	X
Borg-Warner	___	X
Bondex International	___	X
Celotex	___	X
Certainteed Corporation	___	X
Daimler Chrysler Corporation	___	X
Ford Motor Company	___	X
Garlock	___	X
General Motors Corporation	___	X
Georgia Pacific	X	___
H. K. Porter	___	X
Ingersoll-Rand	___	X
Johns-Manville	___	X
Kaiser Aluminum And Chemical	___	X
Knox Glass	X	___
Narco	___	X
Pneumo Abex Corporation	___	X
Union Carbide Company	___	X
Uniroyal	___	X

QUESTION NO. 2:

Was there a defect in the marketing of the asbestos-containing products at the time they left the possession of those named below that was a producing cause of the injury, if any, to TIMOTHY SHAWN BOSTIC that resulted in his death?

A "marketing defect" with respect to the product means the failure to give adequate warnings of the product's dangers that were known or by the application of reasonably developed human skill and foresight should have been known or failure to give adequate instructions to avoid such dangers, which failure rendered the product unreasonably dangerous as marketed.

"Adequate" warnings and instructions mean warnings and instructions given in a form that could reasonably be expected to catch the attention of a reasonably prudent person in the circumstances of the product's use; and the content of the warnings and instructions must be comprehensible to the average user and must convey a fair indication of the nature and extent of the danger and how to avoid it to the mind of a reasonably prudent person.

An "unreasonably dangerous" product is one that is dangerous to an extent beyond that which would be contemplated by the ordinary user of the product with the ordinary knowledge common to the community as to the product's characteristics.

Answer "YES" or "NO".	YES	NO
Allied-Signal	___	X
Borg-Warner	___	X
Bondex International	___	X
Celotex	___	X
Certainteed Corporation	___	X
Daimler Chrysler Corporation	___	X
Ford Motor Company	___	X
Garlock	___	X
General Motors Corporation	___	X

Georgia Pacific	X	
H. K. Porter		X
Ingersoll-Rand		X
Johns-Manville		X
Kaiser Aluminum And Chemical		X
Narco		X
Pneumo Abex Corporation		X
Union Carbide Company		X
Uniroyal		X

If you have answered Question Nos. 1 or 2 "YES" with respect to more than one company, then answer Question No. 3 as to those Companies only; otherwise, do not answer Question No. 3.

QUESTION 3:

For each of those named below found by you to have caused the injury to TIMOTHY SHAWN BOSTIC that resulted in his death, find the percentage of responsibility.

The percentages you find must total 100 percent. The percentages must be expressed in whole numbers. The percentage of causation attributable to those named below is not necessarily measured by the number of acts, omissions, or product defects found.

Assign a percentage only to those Companies you have answered "Yes" to in Question No. 1 or 2:

a. Allied-Signal	Ø %
b. Borg-Warner	Ø %
c. Bondex International	Ø %
d. Celotex	Ø %
e. Certainteed	Ø %
f. Daimler Chrysler	Ø %
g. Ford Motor	Ø %
h. Garlock	Ø %
i. General Motors	Ø %
j. Georgia Pacific	75 %
k. H. K. Porter	Ø %
l. Ingersoll-Rand	Ø %
m. Johns-Manville	Ø %

n. Kaiser Aluminum And Chemical	Ø	%
o. Knox Glass	25	%
p. Narco	Ø	%
q. Pneumo Abex	Ø	%
r. Union Carbide	Ø	%
s. Uniroyal	Ø	%

TOTAL: 100 %

If you have answered Question No. 1 or 2 "YES" with respect to any one or more Companies, answer Question No. 4 as to those Companies; otherwise, do not answer Question No. 4.

QUESTION 4:

Do you find by clear and convincing evidence that the injury resulting in the death of TIMOTHY SHAWN BOSTIC resulted from malicet?

"Clear and convincing evidence" means the measure or degree of proof that produces a firm belief or conviction of the truth of the allegations sought to be established.

"Malice" means an act or omission by the Defendant,

(i) which, when viewed objectively from the standpoint of the Defendant at the time of its occurrence, involved an extreme degree of risk, considering the probability and magnitude of the potential harm to others; and

(ii) of which the Defendant had actual, subjective awareness of the risk involved, but nevertheless proceeded with conscious indifference to the rights, safety, or welfare of others.

Answer "YES" or "NO".	YES	NO
Georgia Pacific	X	

If you have answered Questions Nos. 1 or 2 "YES" with respect to any one or more Defendants, then answer Question No. 5; otherwise, do not answer Question No. 5.

QUESTION NO. 5:

What sum of money would have fairly and reasonably compensated TIMOTHY SHAWN BOSTIC for his asbestos-related injuries from the time of his injury until his death?

Consider the elements of damages listed below and none other. Consider each element separately. Do not award any sum of money on any element if you have otherwise, under some other element, awarded a sum of money for the same loss. That is, do not compensate twice for the same loss, if any. Do not include interest on any amount of damages you find.

a. Pain and Mental anguish.

"Pain and mental anguish" means the conscious physical pain and emotional pain, torment, and suffering experienced by TIMOTHY SHAWN BOSTIC before his death as a result of his asbestos-related injuries.

Answer in dollars and cents for damages, if any.

Amount $ 753,000.00

b. Disfigurement.

"Disfigurement" means that which, as a result of his asbestos-related injuries, impaired the beauty, symmetry, or appearance of TIMOTHY SHAWN BOSTIC and that rendered him unsightly, misshapen, imperfect, or deformed in some manner.

Answer in dollars and cents for damages, if any.

Amount $ 251,000.00

c. Physical impairment.

"Physical impairment" means the restriction of physical activities experienced by TIMOTHY SHAWN BOSTIC as a result of his asbestos-related injuries. Loss of enjoyment of life is a factor to consider in determining physical impairment. The effect of any physical impairment must be substantial and extend beyond any pain, suffering, or mental anguish.

Answer in dollars and cents for damages, if any.

Amount $ 251,000.00

d. Medical expenses.

"Medical expenses" means the reasonable expense of the necessary medical and hospital care received by TIMOTHY SHAWN BOSTIC for treatment of injuries sustained by him as a result of his asbestos-related injuries.

Answer in dollars and cents for damages, if any.

Amount $ 251,000.00

e. Funeral and burial expenses.

"Funeral and burial expenses" means the reasonable amount of expenses for funeral and burial of TIMOTHY SHAWN BOSTIC reasonably suitable to his station in life.

Answer in dollars and cents for damages, if any.

Amount $ 10,000.00

If you have answered Questions Nos. 1 or 2 "YES" with respect to any one or more Defendants, then answer Question No. 6; otherwise, do not answer Question No. 6.

QUESTION NO. 6:

What sum of money, if paid now in cash, would fairly and reasonably compensate SUSAN ELAINE BOSTIC for her injuries, if any, that resulted from the death of TIMOTHY SHAWN BOSTIC?

Consider the elements of damages listed below and none other. Consider each element separately. Do not award any sum of money on any element if you have otherwise, under some other element, awarded a sum of money for the same loss. That is, do not compensate twice for the same loss, if any. Do not include interest on any amount of damages you find.

a. Pecuniary loss.

"Pecuniary loss" means the loss of the care, maintenance, support, services, advice, counsel, and reasonable contributions of a pecuniary value, excluding loss of addition to the estate, that SUSAN ELAINE BOSTIC, in reasonable probability, would have received from TIMOTHY SHAWN BOSTIC had he lived.

Answer in dollars and cents for damages, if any, that —

were sustained in the past;	Answer	$ 402,594.00
in reasonable probability will be sustained in the future.	Answer	$ 402,594.00

b. Loss of companionship and society.

"Loss of companionship and society" means the loss of the positive benefits flowing from the love, comfort, companionship, and society that SUSAN ELAINE BOSTIC, in reasonable probability, would have received from TIMOTHY SHAWN BOSTIC had he lived.

Answer in dollars and cents for damages, if any, that —

were sustained in the past;	Answer	$ 402,594.00
in reasonable probability will be sustained in the future.	Answer	$ 402,594.00

c. Mental anguish.

"Mental anguish" means the emotional pain, torment, and suffering experienced by SUSAN ELAINE BOSTIC because of the death of TIMOTHY SHAWN BOSTIC.

Answer in dollars and cents for damages, if any, that -

were sustained in the past; Answer $ 402,594.00

in reasonable probability will be sustained in the future. Answer $ 402,594.00

In determining damages for elements b and c, you may consider the relationship between SUSAN ELAINE BOSTIC and TIMOTHY SHAWN BOSTIC, their living arrangements, any extended absences from one another, the harmony of their family relations, and their common interests and activities.

d. Loss of addition to the estate.

"Loss of addition to the estate" means the loss of the present value of assets that the deceased, in reasonable probability, would have added to the estate existing at the end of his natural life and left to SUSAN ELAINE BOSTIC.

Answer in dollars and cents for damages, if any.

Answer $ 603,891.00

If you have answered Questions Nos. 1 or 2 "YES" with respect to any one or more Defendants, then answer Question No. 7; otherwise, do not answer Question No. 7.

QUESTION NO. 7:

What sum of money, if paid now in cash, would fairly and reasonably compensate KYLE ANTHONY BOSTIC for his injuries, if any, that resulted from the death of his father TIMOTHY SHAWN BOSTIC?

Consider the elements of damages listed below and none other. Consider each element separately. Do not award any sum of money on any element if you have otherwise, under some other element, awarded a sum of money for the same loss. That

is, do not compensate twice for the same loss, if any. Do not include interest on any amount of damages you find.

a. Pecuniary loss.

"Pecuniary loss" means the loss of the care, maintenance, support, services, advice, counsel, and reasonable contributions of a pecuniary value that KYLE ANTHONY BOSTIC, in reasonable probability, would have received from TIMOTHY SHAWN BOSTIC had he lived.

Answer in dollars and cents for damages, if any, that -

were sustained in the past;	Answer	$ 301,945.00
in reasonable probability will be sustained in the future.	Answer	$ 301,945.00

b. Loss of companionship and society.

"Loss of companionship and society" means the loss of the positive benefits flowing from the love, comfort, companionship, and society that KYLE ANTHONY BOSTIC, in reasonable probability, would have received from TIMOTHY SHAWN BOSTIC had he lived.

Answer in dollars and cents for damages, if any, that -

were sustained in the past;	Answer	$ 301,945.00
in reasonable probability will be sustained in the future.	Answer	$ 301,945.00

c. Mental anguish.

"Mental anguish" means the emotional pain, torment, and suffering experienced by KYLE ANTHONY BOSTIC because of the death of TIMOTHY SHAWN BOSTIC.

Answer in dollars and cents for damages, if any, that -

were sustained in the past;	Answer	$ 301,945.00
in reasonable probability will be sustained in the future.	Answer	$ 301,945.00

In determining damages for elements b and c, you may consider the relationship between TIMOTHY SHAWN BOSTIC and his son KYLE ANTHONY BOSTIC, their living arrangements, any extended absences from one another, the harmony of their family relations, and their common interests and activities.

QUESTION NO. 8:

What sum of money, if paid now in cash, would fairly and reasonably compensate HELEN DONNAHOE for her injuries, if any, that resulted from the death of TIMOTHY SHAWN BOSTIC, her son ?

Consider the elements of damages listed below and none other. Consider each element separately. Do not award any sum of money on any element if you have otherwise, under some other element, awarded a sum of money for the same loss. That is, do not compensate twice for the same loss, if any. Do not include interest on any amount of damages you find.

a. Pecuniary loss.

"Pecuniary loss" means the loss of the care, maintenance, support, services, advice, counsel, and reasonable contributions of a pecuniary value that HELEN DONNAHOE in reasonable probability, would have received from TIMOTHY SHAWN BOSTIC had he lived.

Answer in dollars and cents for damages, if any, that -

were sustained in the past: Answer $201,297.00

that in reasonable probability will be sustained in the future: Answer $201,297.00

b. Loss of companionship and society.

"Loss of companionship and society" means the loss of the positive benefits flowing from the love, comfort, companionship, and society that HELEN DONNAHOE in reasonable probability, would have received from TIMOTHY SHAWN BOSTIC had he lived.

Answer in dollars and cents for damages, if any, that -

were sustained in the past: Answer $201,297.00

that in reasonable probability will be sustained in the future: Answer $201,297.00

c. Mental anguish.

"Mental anguish" means the emotional pain, torment, and suffering experienced by HELEN DONNAHOE because of the death of TIMOTHY SHAWN BOSTIC.

Answer in dollars and cents for damages, if any, that -

were sustained in the past: Answer $201,297.00

in reasonable probability will be sustained in the future: Answer $201,297.00

In determining damages for elements b and c, you may consider the relationship between TIMOTHY SHAWN BOSTIC and his mother, their living arrangements, any extended absences from one another, the harmony of their family relations, and their common interests and activities.

If you have answered Question No. 4 "YES" with respect to any one or more Defendants, then answer Question No. 8 as to those Defendants; otherwise, do not answer Question No. 8.

QUESTION NO. 8:

What sum of money, if any, should be assessed against the Defendant as exemplary damages for the death of TIMOTHY SHAWN BOSTIC?

"Exemplary damages" means any damages awarded as a penalty or by way of punishment. Exemplary damages includes punitive damages.

In determining the amount of exemplary damages, you shall consider evidence, if any, relating to --

a. The nature of the wrong.

b. The character of the conduct involved.

c. The degree of culpability of the wrongdoer.

d. The situation and sensibilities of the parties concerned.

e. The extent to which such conduct offends a public sense of justice and propriety.

f. The net worth of the defendant.

Answer in dollar and cents, if any.

Georgia Pacific Answer: $ 6,038,910 00

If, in your answer to Question No. 8, you have entered any amount of exemplary damages as to any Defendant, then answer Question No. 9. Otherwise, do not answer Question No. 9.

QUESTION NO. 9:

How do you apportion the exemplary damages between SUSAN ELAINE BOSTIC, KYLE ANTHONY BOSTIC and HELEN DONNAHOE?

Answer by stating a percentage for each person named below. The percentages you find must total 100 percent.

SUSAN ELAINE BOSTIC	50 %
KYLE ANTHONY BOSTIC	30 %
HELEN DONNAHOE	20 %
Total	100 %

After you return to the jury room, you will select your own presiding juror. The first thing the presiding juror will do is to have this complete charge read aloud and then you will deliberate upon your answers to the questions asked.

It is the duty of the presiding juror --

1. to preside during your deliberations,
2. to see your deliberations are conducted in an orderly manner and in accordance with the instructions in this charge,
3. to write out and hand to the bailiff any communications concerning the case that you desire to have delivered to the judge,
4. to vote on the questions,
5. to write your answers to the questions in the spaces provided, and
6. to certify to your verdict in the space provided for the presiding juror's signature or to obtain the signatures of all the jurors who agree with the verdict if your verdict is less than unanimous.

You should not discuss the case with anyone, not even with the other members of the jury, unless all of you are present and assembled in the jury room. Should anyone attempt to talk to you about the case before the verdict is returned, whether at the courthouse, at your home, or elsewhere, please inform the judge of this fact.

When you have answered all the questions you are required to answer under the instructions of the judge and your presiding juror has placed your answers in the spaces provided and signed the verdict as presiding juror or obtained the signatures, you will inform the bailiff at the door of the jury room that you have reached a verdict, and then you will return into Court with your verdict.

JUDGE PRESIDING

We, the jury, have answered the above and foregoing questions as indicated, and return these answers to the Court as our verdict.

(To be signed by the Presiding Juror only, if unanimous).

David J Jones

PRESIDING JUROR

(To be signed by the five or more jurors who agree to the answers, if not unanimous).

_____ MEOCHA BERRYMAN

_____ SUSIE BARBOSA

_____ LOLA MOSLEY

_____ DIANNA WOITAS

_____ TESSIE BROWN

David J Jones 07 DAVID JONES

TAB B

GEORGIA-PACIFIC CORPORATION, Appellant v. SUSAN ELAINE BOSTIC, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE HEIRS AND ESTATE OF TIMOTHY SHAWN BOSTIC, DECEASED; HELEN DONNAHOE; AND KYLE ANTHONY BOSTIC, Appellees

No. 05-08-01390-CV

COURT OF APPEALS OF TEXAS, FIFTH DISTRICT, DALLAS

320 S.W.3d 588; 2010 Tex. App. LEXIS 7072

August 26, 2010, Opinion Filed

SUBSEQUENT HISTORY: Released for Publication October 28, 2010.
Petition for review filed by, 11/12/2010

PRIOR HISTORY: [**1]
On Appeal from the County Court at Law No. 1, Dallas County, Texas. Trial Court Cause No. cc-03-01977-A.

COUNSEL: For APPELLANT: Deborah G. Hankinson, Hankinson Levinger LLP, Dallas, TX.

For APPELLEE: Ms. Denyse Ronan Clancy, Dallas, Tx.

JUDGES: Before Justices Bridges, FitzGerald, and Fillmore. Opinion By Justice Fillmore.

OPINION BY: ROBERT M. FILLMORE

OPINION

[*590] Opinion By Justice Fillmore

Appellant Georgia-Pacific Corporation appeals the final judgment of the trial court in favor of appellees Susan Elaine Bostic, Individually and as Personal Representative of the Heirs and Estate of Timothy Shawn Bostic, Deceased, Helen Donnahoe, and Kyle Anthony Bostic. In three issues, Georgia-Pacific contends (1) there is legally insufficient evidence that Georgia-Pacific's joint compound caused Timothy Bostic's mesothelioma, (2) there is no evidence to support the jury's finding of gross negligence against Georgia-Pacific, and (3) the trial court abused its discretion by denying Georgia-Pacific's motion for mistrial and by vacating the order granting Georgia-Pacific a new trial.

Concluding there is legally insufficient evidence of causation, we reverse the trial court's judgment and render judgment that appellees take nothing on their claims against Georgia-Pacific.

PROCEDURAL BACKGROUND

In February 2003, Timothy Bostic's wife, son, father, and mother brought [**2] wrongful death claims and a survival action against Georgia-Pacific and numerous other entities alleging Timothy's death was caused by exposure to asbestos. At the time of trial, Georgia-Pacific was the sole remaining defendant, the other named defendants having settled or been dismissed. Appellees alleged Georgia-Pacific was negligent, strictly liable for a product marketing defect, and grossly negligent.

In 2005, Judge Sally Montgomery presided over the trial of this lawsuit in Dallas County Court at Law No. 3. After the jury verdict awarding appellees actual and punitive damages, Judge Montgomery ordered appellees to either elect a new trial on all issues or agree to remit a misallocated [*591] award of future lost wages and the

award of punitive damages. Appellees elected a new trial. The lawsuit was tried for the second time before a jury in 2006. [1] The jury returned a verdict in favor of appellees, finding Georgia-Pacific seventy-five percent liable and Knox Glass, Inc., a non-party former employer of Timothy, twenty-five percent liable for Timothy's death. The jury awarded $ 7,554,907 in compensatory damages and S 6,038,910 in punitive damages.

1 Harold Bostic, Timothy's father, died [**3] while the case was being retried.

Georgia-Pacific filed a motion to recuse Judge Montgomery. Judge M. Kent Sims granted the motion to recuse, and the lawsuit was transferred to Judge Russell H. Roden, Dallas County Court at Law No. 1. In December 2006, the trial court granted Georgia-Pacific's motion for mistrial and ordered a new trial.

In January 2007, Judge D'Metria Benson became the presiding judge of Dallas County Court at Law No. 1. In February 2008, appellees filed a motion to vacate Judge Roden's order granting a new trial and for entry of judgment. In July 2008, Judge Benson granted appellees' motion to vacate the order for new trial and signed a judgment based on the jury's June 2006 verdict. In October 2008, Judge Benson signed the amended final judgment awarding appellees $ 6,784,135.32 in compensatory damages and $ 4,831,128.00 in punitive damages. Georgia-Pacific appealed.

LEGAL SUFFICIENCY OF THE EVIDENCE

In its first issue, Georgia-Pacific asserts there is legally insufficient evidence that Georgia-Pacific asbestos-containing joint compound [2] caused Timothy's mesothelioma, a form of cancer usually linked to asbestos exposure. Georgia-Pacific asserts there is no evidence [**4] Timothy was exposed to Georgia-Pacific asbestos-containing joint compound, and even if there was evidence of exposure, there is no evidence of dose. Further, Georgia-Pacific asserts that even if there was evidence of exposure and dose, the record contains no epidemiological studies showing that persons similar to Timothy with exposure to asbestos-containing joint compound had an increased risk of developing mesothelioma. Georgia-Pacific also asserts that appellees' experts' theory that "each and every exposure" to asbestos caused Timothy's mesothelioma was rejected by the Texas Supreme Court in *Borg-Warner Corp. v. Flores, 232 S.W.3d 765 (Tex. 2007)*. [3] Georgia-Pacific asserts that for each of these reasons, appellees' negligence and defective marketing claims against Georgia-Pacific fail as a matter of law.

2 Joint compound, sometimes called "drywall mud," is used to connect and smooth the seams of adjoining pieces of drywall, also called sheetrock, and to cover nail heads on sheets of drywall. Joint compound is spread in a thin coat and then smoothed. After it dries, uneven areas are further smoothed by sanding. This process is sometimes carried out multiple times in further refining [**5] the surface.

3 Prior to the 2008 final judgment in this case, the Texas Supreme Court issued its *Flores* opinion on toxic tort law in asbestos cases, including specific causation. Like the instant appeal, in *Georgia-Pacific Corp. v. Stephens, 239 S.W.3d 304 (Tex. App.-Houston [1st Dist.] 2007, pet. denied)*, issued after *Flores*, the asbestos trial occurred before the *Flores* decision, but the appellate court was bound by *Flores*. *Stephens, 239 S.W.3d at 321*; *see also Smith v. Kelly-Moore Paint Co., 307 S.W.3d 829, 834 (Tex. App.-Fort Worth 2010, no pet.)* (appellate court bound by *Flores* as supreme court precedent); *Lubbock Cnty v. Trammel's Lubbock Bail Bonds, 80 S.W.3d 580, 585 (Tex. 2002)* (once supreme court announces proposition of law, that proposition is binding precedent and may not be modified or abrogated by court of appeals).

[*592] When, as here, an appellant attacks the legal sufficiency of an adverse finding on an issue on which it did not have the burden of proof, it must demonstrate that no evidence supports the finding. *Croucher v. Croucher, 660 S.W.2d 55, 58 (Tex. 1983)*. "The final test for legal sufficiency must always be whether the evidence at trial would enable reasonable and [**6] fair-minded people to reach the verdict under review." *Del Lago Partners, Inc. v. Smith, 307 S.W.3d 762, 770 (Tex. 2010)* (quoting *City of Keller v. Wilson, 168 S.W.3d 802, 827 (Tex. 2005)*). We review the evidence in the light most favorable to the verdict, crediting favorable evidence if reasonable jurors could and disregarding contrary evidence unless reasonable jurors could not. *Del Lago Partners, 307 S.W.3d at 770*.

Asbestos Exposure

In 2002, Timothy was diagnosed with mesothelioma

at the age of forty. He died in 2003. Appellees claim Timothy's mesothelioma was caused by his exposure to asbestos-containing joint compound manufactured by Georgia-Pacific. Georgia-Pacific acknowledged there is some evidence that Timothy used or was present during the use of joint compound between 1967 and 1977, but contends there is no evidence of exposure to Georgia-Pacific asbestos-containing joint compound. *See Gaulding v. Celotex Corp., 772 S.W.2d 66, 68 (Tex. 1989)* (fundamental principle of products liability law is plaintiff must prove defendant supplied product which caused injury).

Georgia-Pacific manufactured and sold joint compound products that included chrysotile asbestos [4] fibers from the [**7] time it acquired Bestwall Gypsum Company in 1965 until 1977, when Georgia-Pacific ceased marketing asbestos-containing joint compound. Those Georgia-Pacific joint compounds were offered in a dry mix formula and a pre-mixed formula. [5] The parties do not dispute that any exposure of Timothy to a Georgia-Pacific asbestos-containing joint compound would have occurred between 1967 and 1977. Evidence regarding Timothy's work with or around Georgia-Pacific asbestos-containing joint compound in this ten-year period came from Timothy's and Harold Bostic's deposition testimony read and played by videotape at trial and Timothy's work history sheets.

> 4 Chrysotile is the most abundant type of asbestos fiber and is a serpentine fiber consisting of "pliable curly fibrils which resemble scrolled tubes." *Flores, 232 S.W.3d at 766 n.4* (citing Lee S. Siegel, Note, *As the Asbestos Crumbles: A Look at New Evidentiary Issues in Asbestos Related Property Damage Litigation, 20 HOFSTRA L. REV. 1139, 1149 (1992)*); *Smith, 307 S.W.3d at 832 n.3*. The remaining commercial types of asbestos fibers are amphiboles, which include amosite and crocidolite. *Smith, 307 S.W.3d at 832, 837*; *Bartel v. John Crane, Inc., 316 F. Supp.2d 603, 606 (N.D. Ohio 2004)*, [**8] *aff'd, 424 F.3d 488 (6th Cir. 2005)*.
>
> 5 Dust containing asbestos fibers could be released by sanding or sweeping either formula and by mixing the dry formula.

Timothy testified he had been around drywall work his entire life, and he recalled that before the age of ten, he observed his father performing drywall work. He stated he mixed and sanded joint compound from the age of five. He testified he recalled at a young age helping his father "mud the holes" with joint compound. While he did not provide any more specifics of drywall work he performed with his father before 1977, he believed he used and was exposed to Georgia-Pacific joint compound before he graduated from high school in 1980. Timothy's work history sheets also indicate he worked with and [*593] around other brands of asbestos-containing joint compounds.

Timothy's work history sheets also assert exposure to asbestos fibers from Georgia-Pacific joint compound as a result of household exposure to Harold's clothing. This alleged exposure would have occurred prior to his parents' divorce in 1972, when he was ten years old, and thereafter when he stayed with his father on weekends, holidays, and at times in the summer.

Harold testified [**9] he used Georgia-Pacific joint compound ninety-eight percent of the time that he did drywall work. He testified he tried one or two other brands of joint compound, but he always returned to Georgia-Pacific's product. With one exception listed below, Harold said he could not positively associate Georgia-Pacific's product with any specific drywall job. He stated he knew he had used Georgia-Pacific's product on several jobs, but he could not recall exactly where. Harold testified that Timothy began to accompany him on remodeling jobs in 1967 when Timothy was the age of five. Timothy helped mix joint compound, applied and sanded joint compound to the height Timothy could reach, and breathed in the dust from sanded joint compound.

According to his testimony, Harold worked part-time on only one remodeling or construction job at a time for a family member or friend. Each project took a lengthy period of time to complete. Although he testified there was no doubt in his mind that he and Timothy used Georgia-Pacific joint compound "many, many times" between 1967 and 1977, he identified and described work performed on eight remodeling projects for the relevant period. Harold identified only one [**10] specific project where Georgia-Pacific joint compound was used, and he could not recall whether Timothy performed drywall work or was present during drywall work on that project. Only three projects were identified in which Harold and Timothy may have performed drywall work together or Timothy may have been present when Harold performed

drywall work. Following is a summary chronology of the remodeling or construction jobs Harold recalled for this relevant period:

. In the house he lived in with his wife and Timothy, Harold performed drywall work while remodeling a utility room. Timothy was four or five years of age at the time and may have played in the joint compound "mud" or sanded drywall to the height he could reach.

. During the course of a three-month project, Harold built a ten foot by ten foot bathroom and dressing room in his brother's house. Harold performed drywall work as part of the project. He could not recall the brand of joint compound he utilized. Timothy performed sewer work on this project. Timothy was six or seven years of age.

. Harold remodeled the interior of his sister's service station. The project lasted a year in 1968 or 1970. Harold performed drywall work on [**11] an eight foot by seven foot room and the ceiling of the room. Timothy was between the ages of six and eight.

. Harold built living quarters in a friend's garage and car dealership. This year-long project included drywall work. He has no memory of Timothy working with drywall on this project.

. In connection with the construction of the interior of a friend's prefabricated home, Harold performed drywall work. The construction project took a year to complete. Harold recalled utilizing Georgia-Pacific joint compound, but he did not recall whether Timothy performed drywall work or whether Timothy was present when Harold performed drywall work. Timothy dug the septic [*594] tank on this project. Timothy was between the ages of ten and twelve.

. In finishing a room in his sister's newer home, Harold could not recall utilizing drywall. Timothy was eleven or twelve years of age.

. During a year-long construction project, Harold performed drywall work in his sister's five hundred square foot older home.

. In building partitions in his mother's home, Harold recalled that he may have patched some cracks, but he did not perform drywall work and he could not recall using joint compound. Timothy was thirteen [**12] or fourteen years of age.

Evidence at trial substantiated Timothy was exposed to asbestos other than through use of or presence during the use of Georgia-Pacific asbestos-containing joint compound. In addition to Georgia-Pacific joint compound, the evidence established and appellees acknowledge that Timothy was exposed to numerous asbestos products and asbestos-containing products, both occupationally and through household and bystander exposure.

Timothy was exposed to asbestos utilized at Knox Glass. Harold was employed as a welder at Knox Glass from around 1960 until the plant closed in 1984. Asbestos and asbestos-containing products were used throughout the glass container factory, particularly to insulate against heat. Harold was exposed to asbestos fibers, which were inadvertently brought home on his clothing, thereby exposing Timothy. These household exposures to asbestos occurred consistently from Timothy's birth until his parents were divorced when he was ten years old, from time spent with Harold on weekends, holidays, and in the summers between the ages of ten and fifteen, and from the ages of fifteen to eighteen when Timothy lived with Harold.

Timothy was further exposed to [**13] asbestos utilized at Knox Glass in connection with his janitorial and mechanical work at Knox Glass in the summer months of 1980 through 1982. [6] He worked in both the hot end of the plant, where glass bottles were manufactured and where asbestos was more likely prevalent, and in the cold end of the plant. [7] The evidence indicated that asbestos or asbestos-containing items in the work environment at Knox Glass included refractory cements, fireproofing, asbestos cloth, pumps, packing (braided rope made from asbestos), valves, furnaces, blow heads, gaskets, and firebrick mortar. Timothy's work responsibilities included cutting raw asbestos cloth, sweeping up asbestos-containing dust, cleaning up after asbestos pipe coverings were repaired, removing flaking asbestos from machines and replacing it with asbestos he cut, and wearing asbestos gloves or mittens.

6 In 1988, Timothy and Harold underwent testing to determine whether they had contracted an asbestos-related disease as a result of working at Knox Glass. A bronchial alveolar lavage (BAL) was performed on each of them to determine what type of fiber exposures had occurred. Two chrysotile and two amosite asbestos fibers were

found in [**14] Timothy's BAL. There were additional fibers that were not asbestos that could not be identified. Three amosite asbestos fibers were found in Harold Bostic's BAL.

7 Timothy testified he worked summer months at Knox Glass in 1980, 1981, and 1982. Appellees seek to narrow the time period of exposure to asbestos and asbestos-containing products to three months by asserting that to be the cumulative amount of time Timothy worked in the hot end of the plant.

Timothy also had occupational exposure to asbestos during 1977 and 1978, when he worked for approximately six months as a [*595] welder's assistant for Palestine Contractors. There he was exposed to asbestos while removing gaskets and asbestos pipe insulation three to four times each week.

Timothy was also exposed to asbestos fibers as a result of mechanical work Harold performed on automobiles, including brake work. Timothy was exposed in the household to asbestos fibers on Harold's clothing and as a bystander and assistant to his father with respect to the automotive repairs. In addition, when he was older, Timothy performed mechanical work on vehicles resulting in exposure to a number of asbestos-containing products, including clutches, brake [**15] pads and linings, friction products, and gaskets. He testified that he performed approximately four brake jobs a year and fewer than ten clutch jobs in his lifetime. Timothy identified a number of manufacturers of asbestos-containing products he was exposed to in connection with the mechanical work he performed.

After his graduation from high school, Timothy began remodeling homes on his own. According to the evidence, he was exposed to a number of asbestos-containing products in his remodeling work, including roofing shingles, floor tiles, and ceiling tiles. Timothy identified several manufacturers and marketers of asbestos-containing products he utilized in addition to Georiga-Pacific joint compounds. It is not disputed that Timothy used Georgia-Pacific products after his graduation from high school in 1980. However, these uses occurred after Georgia-Pacific joint compounds no longer contained asbestos.

Albeit limited, the record contains evidence through the lay testimony of Timothy and Harold, and Timothy's work history sheets, of Timothy's use or presence during the use of Georgia-Pacific's asbestos-containing joint compound. On this record, we disagree with Georgia-Pacific's argument [**16] that there is no evidence Timothy was exposed to Georgia-Pacific asbestos-containing joint compound.

Substantial-Factor Causation

Georgia-Pacific next contends there is legally insufficient evidence of causation, an essential element of appellees' negligence and strict liability defective marketing claims. In a toxic tort case, the plaintiff must show both general and specific causation. *See Merrell Dow Pharms. v. Havner, 953 S.W.2d 706, 714-15, 720 (Tex. 1997)*. "General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether a substance caused a particular individual's injury." *Havner, 953 S.W.2d at 714*; *see also Georgia-Pacific Corp. v. Stephens, 239 S.W.3d 304, 308-09 (Tex. App.-Houston [1st Dist.] 2007, pet. denied)*. For purposes of this appeal, Georgia-Pacific is not challenging the legal sufficiency of the evidence of general causation that inhalation of chrysotile asbestos fibers can cause mesothelioma. Instead, Georgia-Pacific challenges the legal sufficiency of the evidence as to specific causation, that is whether Georgia-Pacific asbestos-containing joint compound was, in fact, [**17] a cause of Timothy's mesothelioma.

Causation

Georgia-Pacific contends that appellees failed to introduce evidence sufficient to satisfy the "substantial factor" standard of causation set forth in *Flores*, because appellees produced no evidence of cause-in-fact. In the context of an asbestos case, the Texas Supreme Court explained that "asbestos in the defendant's product [must be] a substantial factor in bringing about the plaintiff's injuries." *Flores, 232 S.W.3d at 770*. The *Flores* court agreed that the "frequency, regularity, and proximity" [*596] test for exposure to asbestos set out in *Lohrmann v. Pittsburgh Corning Corp., 782 F.2d 1156 (4th Cir.1986)*, is appropriate. *Flores, 232 S.W.3d at 769*; *see also Lohrmann, 782 F.2d at 1162-63* (to support reasonable inference of substantial causation from circumstantial evidence, there must be evidence of exposure to specific product on regular basis over extended period of time in proximity to where plaintiff actually worked). The supreme court stated, however, that the terms "frequency," "regularity," and "proximity"

do not "capture the emphasis [Texas] jurisprudence has placed on causation as an essential predicate to liability," and agreed with [**18] *Lohrmann's* analysis that the asbestos exposure must be a substantial factor in causing the asbestos-related disease. *Flores, 232 S.W.3d at 769*; *see also Lohrmann, 782 F.2d at 1162*.

Causation is an essential element of appellees' claims for negligence and product marketing defect. Proximate cause is an element of a negligence claim, while producing cause is an element of a strict liability claim. *Gen. Motors Corp. v. Saenz, 873 S.W.2d 353, 357 (Tex. 1993)*. "Both producing and proximate cause contain the cause-in-fact element, which requires that the defendant's act be a 'substantial factor in bringing about the injury and without which the harm would not have occurred.'" *Metro Allied Ins. Agency, Inc. v. Lin, 304 S.W.3d 830, 835 (Tex. 2009)* (quoting *Doe v. Boys Clubs of Greater Dallas, Inc., 907 S.W.2d 472, 481 (Tex. 1985))*; *see also Flores, 232 S.W.3d at 770* (quoting *RESTATEMENT (SECOND) OF TORTS 431 cmt. a* (1965)) ("substantial" used to denote the fact that the defendant's conduct has such an effect in producing harm as to lead reasonable men to regard it as a cause)*; Prudential Ins. Co. of Am. v. Jefferson Assocs., Ltd., 896 S.W.2d 156, 161 (Tex. 1995)*; *Patino v. Complete Tire, Inc., 158 S.W.3d 655, 661 (Tex. App.-Dallas 2005, pet. denied)*.

Appellees [**19] assert that *Flores* does not require "but-for" causation in proving specific causation and that *Flores* requires only that appellees prove Timothy's exposure to Georgia-Pacific asbestos-containing joint compound was a "substantial factor" in contributing to his risk of mesothelioma. We disagree. The Texas Supreme Court "[has] recognized that '[c]ommon to both proximate and producing cause is causation in fact, including the requirement that the defendant's conduct or product be a substantial factor in bringing about the plaintiff's injuries.'" *Flores, 232 S.W.3d at 770* (quoting *Union Pump Co. v. Allbritton, 898 S.W.2d 773, 775 (Tex. 1995))*; *see also Ford Motor Co. v. Ledesma, 242 S.W.3d 32, 46 (Tex. 2007)*.

Thus, to establish substantial-factor causation, a plaintiff must prove that the defendant's conduct was a cause-in-fact of the harm. *See Flores, 232 S.W.3d at 770*. "In asbestos cases, then, we must determine whether the asbestos in the defendant's product was a substantial factor in bringing about the plaintiff's injuries" and without which the injuries would not have occurred. *Id.; see also Stephens, 239 S.W.3d at 308-09*.

Appellees acknowledged in their brief and at oral submission [**20] that their only expert who opined on specific causation of Timothy's mesothelioma was pathologist Samuel Hammar, M.D. However, Dr. Hammar testified he could not opine that Timothy would not have developed mesothelioma absent exposure to Georgia-Pacific asbestos-containing joint compound. Because a plaintiff must prove that the defendant's conduct was a cause-in-fact of the harm, appellees' evidence is insufficient to satisfy the required substantial-factor causation element for maintaining [*597] this negligence and product liability suit. *See Flores, 232 S.W.3d at 770*.

"Each and Every Exposure" Theory of Causation

Georgia-Pacific argues that appellees further failed to establish substantial-factor causation because they improperly based their showing of causation on the opinion of their only specific causation expert that each and every exposure to asbestos caused or contributed to cause Timothy's mesothelioma. Georgia-Pacific contends the law set forth in *Flores* and *Stephens* rejects the theory that each and every exposure to asbestos contributes to the development of mesothelioma. *See Flores, 232 S.W.3d at 773*; *Stephens, 239 S.W.3d at 311, 314-15, 321* (in *Flores*, Texas Supreme Court rejected [**21] "any exposure" test for specific causation and adopted substantial-factor causation standard). Therefore, Georgia-Pacific asserts there is no evidence of the essential element of causation to support appellees' negligence or defective marketing claims against Georgia-Pacific.

Quoting from the underlying court of appeals decision, the *Flores* court expressly rejected the "each and every exposure" theory of liability:

> [Plaintiff's expert] acknowledged that asbestos is "plentiful" in the ambient air and that "everyone" is exposed to it. If a single fiber could cause asbestosis, however, "everyone" would be susceptible. No one suggests this is the case. . . . In analyzing the legal sufficiency of Flores's negligence claim, then, the court of appeals erred in holding that "[i]n the context of asbestos-related claims, if there is sufficient evidence that the

> defendant supplied *any* of the asbestos to which a plaintiff was exposed, then the plaintiff has met the burden of proof."

Flores, 232 S.W.3d at 773 (emphasis in original). Instead, as discussed previously in this opinion, the Texas Supreme Court requires the plaintiff to prove "that the defendant's product was a substantial factor in causing [**22] the alleged harm." *Id.*

In *Stephens*, Dr. Hammar, appellees' specific causation expert here, "express[ed] an opinion that each and every exposure that an individual has in a bystander occupational setting causes their mesothelioma." *Stephens, 239 S.W.3d at 315*. Dr. Hammar testified that any exposure the deceased commercial painter had throughout the time he worked was causative of his mesothelioma. *Id. at 320*. The plaintiffs in *Stephens* also relied on the testimony of Jerry Lauderdale, an industrial hygienist. *Id. at 314*. Lauderdale testified that asbestos-related diseases are based on cumulative exposures and that there is no way to isolate a particular exposure that caused development of the disease. *Id. at 315*. It was Lauderdale's opinion "that every exposure does contribute to the development of--potential to develop mesothelioma." *Id.* The court noted that the experts failed to show that "the 'any exposure' theory is generally accepted in the scientific community--that any exposure to a product that contains asbestos results in a statistically significant increase in the risk of developing mesothelioma." *Id. at 320-21*. Consistent with *Flores*, the "each and every exposure" theory was [**23] rejected in *Stephens. Id. at 314-15, 320-21*.

In this case, appellees' specific causation expert, Dr. Hammar, testified that asbestos-related diseases are dose-related diseases, meaning that asbestos exposures comprising the cumulative dose, at least to the point of the first cancer cell's development, are all causative or potentially causative of the disease. He opined, to a reasonable degree of medical probability, that [*598] each and every exposure to asbestos would be a significant contributing, or at least a potentially contributing, factor to the development of mesothelioma. Dr. Hammar agreed that each and every exposure Timothy had to asbestos was significant and a contributing factor in the development of his mesothelioma. These exposures would include Timothy's use of or exposure to asbestos during his employment at Knox Glass, his bystander exposure, and his household exposure to asbestos fibers Harold inadvertently brought home on his clothing from Knox Glass and from his part-time mechanical and construction work.

At oral submission, appellees stated that while not experts on the specific cause of Timothy's disease, their other experts at trial supported Dr. Hammar's testimony. [**24] Appellees' experts at trial on general causation, Arnold R. Brody, Ph.D., an experimental pathologist with a doctorate in cell biology, and Richard Lemen, Ph.D., an epidemiologist, espoused the "each and every exposure" theory. Dr. Brody testified that each and every asbestos fiber a person inhales is considered a cause of or a substantial contributing factor to mesothelioma. Dr. Lemen testified that with each and every exposure to asbestos, and each and every inhalation of asbestos fibers, the fibers add to the total body burden of exposure and contribute to the development of mesothelioma.

In their effort to demonstrate evidence of substantial-factor causation, appellees also refer to the testimony of Richard Kronenberg, M.D., a witness called to testify by Georgia-Pacific. Dr. Kronenberg testified that asbestos diseases result from a total accumulated exposure over a lifetime. He stated that each and every exposure would be a significant contributing factor to an asbestos disease, and that all the exposures throughout Timothy's life working with any sort of asbestos-containing products contributed to the development of his disease.

The Texas Supreme Court has determined that an "each [**25] and every exposure" theory is legally insufficient to support a finding of causation. *Flores, 232 S.W.3d at 773*. We agree with Georgia-Pacific's assertion that appellees did not establish substantial-factor causation to the extent they improperly based their showing of specific causation on their expert's testimony and the testimony of Dr. Kronenberg that each and every exposure to asbestos caused or contributed to cause Timothy's mesothelioma.

Frequency, Proximity, and Regularity of Exposure

Appellees contend that Georgia-Pacific misstates the facts in asserting the appellees' expert relied on the "each and every exposure" theory in support of substantial-factor causation. Instead, appellees assert that in accordance with the substantial-factor causation standard, they presented "substantial evidence of Timothy's ten years of frequent, proximate, and regular

exposure to Georgia-Pacific asbestos joint compound. . . ."

Appellees contend that Timothy "used Georgia-Pacific asbestos joint compound 'many times' over ten years." Appellees assert that "[t]aking into account the frequency, proximity, and regularity of Timothy's exposure to Georgia-Pacific's joint compound," Dr. Hammar testified [**26] that Timothy's exposure to Georgia-Pacific asbestos joint compound would have been sufficient in and of itself to cause his mesothelioma.

It was Dr. Hammar's understanding that from an early age with his father, and then as he grew older, Timothy "did a fair amount of work with the drywall work" and he testified Timothy was exposed to [*599] asbestos during mixing, sanding, and cleaning up of drywall materials. Dr. Hammar testified he had reviewed Timothy's work history sheets "which chronicled Timothy's work history and what he had actually done during his life." But he acknowledged that work history sheets do not tell "the time of exposure and the intensity of the exposure the individual had." Further, he had not reviewed the deposition testimony of Timothy or Harold, although he acknowledged that deposition testimony provides more details of the nature and amount of exposure than work history sheets.

As is detailed above, the record does not contain "substantial" evidence of Timothy's frequent use of or exposure to Georgia-Pacific joint compound for the period 1967 to 1977 and does not establish Timothy's use of the joint compound "many times" over that period. [8] In fact, the evidence regarding [**27] Timothy's exposure to asbestos-containing joint compound and the number of times it occurred during the period 1967 to 1977 belies an assertion of exposure occurring "many times" and belies the information contained in Timothy's work history sheets reviewed by Dr. Hammar. [9]

> 8 Appellees further assert that Timothy's exposure to Georgia-Pacific asbestos-containing joint compound "was far greater than any other asbestos exposure." This is apparently based on appellees "quantifying the ratio of [Timothy's] exposure to Georgia-Pacific asbestos joint compound as compared to his other exposures," which according to appellees was "ten years of Georgia-Pacific asbestos joint compound versus three months of exposure at Knox-Glass [sic], six months at Palestine Contractors, potential household exposure, and sporadic brake work." Without endorsing this methodology, we conclude this argument is inapposite to the "frequency, proximity, and regularity" test associated with substantial-factor causation.
>
> 9 According to Timothy's work history sheets, for a period of over thirty years from the early 1970s, Timothy was exposed to asbestos fibers from Georgia-Pacific joint compounds through his work with [**28] or around them as a self-employed carpenter with a workweek of over forty hours, at various residences with Harold as a coworker, and through household exposure resulting from Harold's work as a carpenter.

We disagree with appellees' contention that Georgia-Pacific is incorrect in arguing appellees relied on the "each and every exposure" theory to support substantial-factor causation. We also disagree with appellees' contention that, instead, they presented "substantial evidence of Timothy's ten years of frequent, proximate, and regular exposure to Georgia-Pacific asbestos joint compound" to establish substantial-factor causation. *See Jackson v. Anchor Packing Co., 994 F.2d 1295, 1308 (8th Cir. 1993)* (although worker testified he worked with gaskets and packets "many times" during years as mechanic, no evidence in record that he used gaskets many times and cannot tell whether he used products "for two jobs or two hundred jobs"); *Lohrmann, 782 F.2d at 1163* (ten to fifteen occasions of exposure to asbestos-containing pipe covering lasting between one and eighteen hours duration insufficient to satisfy frequency-regularity-proximity test). On this record, there is insufficient evidence [**29] of Timothy's frequent and regular exposure to Georgia-Pacific's asbestos-containing joint compound during the relevant time period.

Quantitative Evidence that Exposure Increased Risk of Developing Mesothelioma

Georgia-Pacific also contends that appellees failed to establish substantial-factor causation because there is no evidence of the quantitative exposure (dose) of asbestos fibers from Georgia-Pacific asbestos-containing joint compound to which Timothy [*600] was exposed, and because appellees failed to present evidence of the minimum exposure level leading to an increased risk of development of mesothelioma.

As set forth in *Flores, Stephens*, and *Smith*, the "each

and every exposure" theory and the theory that there is no level of asbestos exposure below which the potential to develop mesothelioma is not present have been rejected. *See Flores, 232 S.W.3d at 769-70, 773*; *Smith v. Kelly-Moore Paint Co., 307 S.W.3d 829, 837 n.9, 839 (Tex. App.-Fort Worth, 2010, no pet.)*; *Stephens, 239 S.W.3d at 311, 314-15*. In order to prove substantial factor causation, a plaintiff must not only show frequency, regularity, and proximity of exposure to the product, the plaintiff must also show reasonable quantitative [**30] evidence that the exposure increased the risk of developing the asbestos-related injury. *Flores, 232 S.W.3d at 769-72*; *Smith, 307 S.W.3d at 833*; *Stephens, 239 S.W.3d at 312*. "Because most chemically induced adverse health effects clearly demonstrate 'thresholds,' there must be reasonable evidence that the exposure was of sufficient magnitude to exceed the threshold before a likelihood of 'causation' can be inferred." *Flores, 232 S.W.3d at 773* (quoting David L. Eaton, *Scientific Judgment and Toxic Torts-A Primer in Toxicology for Judges and Lawyers, 12 J.L. & POL'Y 5, 39 (2003)*).

Flores mandates that a showing of substantial-factor causation include quantitative evidence that Timothy's exposure to asbestos increased his risk of developing an asbestos-related injury. *See Flores, 232 S.W.3d at 772*. Thus, the evidence had to not only show Timothy's exposure to Georgia-Pacific asbestos-containing product on a frequent and regular basis, but also that the exposure was in sufficient amounts to increase his risk of developing mesothelioma. *Id. at 769-70*.

Appellees contend their specific causation expert, Dr. Hammar, "analyzed the mathematical threshold of asbestos exposure leading to a multiple [**31] increased risk of mesothelioma, and testified that Timothy's ten year exposure to Georgia-Pacific asbestos joint compound would have been enough in and of itself to cause his mesothelioma." They state Dr. Hammar considered the threshold for increased risk of developing mesothelioma to be 0.1 fiber cc, [10] and considered the frequency, regularity, and fiber concentration of Timothy's ten years of exposure to Georgia-Pacific asbestos-containing joint compound, and testified, within a reasonable degree of medical certainty, that these exposures were sufficient, in and of themselves, to have caused Timothy's mesothelioma.

> 10 "Asbestos exposure is generally measured in fibers per cubic centimeter (fibers/cc) on an eight hour weighted average. This is calculated by taking the amount of time an individual is exposed to asbestos and mathematically calculating a time weighted average over an eight hour day. . . . In all urban environments, there is a level of asbestos in the ambient air. This level, often called the background level, varies from location to location and ranges from .000001 to .01 fiber/cc." *Bartel, 316 F. Supp. 2d at 607*.

Dr. Hammar testified he does not know of any safe level of [**32] exposure to asbestos under which disease does not occur. He opined that exposure to friable [11] asbestos fibers above background levels had the potential to contribute to the development of Timothy's mesothelioma. It is his opinion that every exposure above .1 fiber cc contributes to the development of mesothelioma. He stated that information published in the Federal Register shows that at .1 fiber cc, statistically there are seven cases of mesothelioma per year.

> 11 "Friable' refers to breathable asbestos." *See Flores, 232 S.W.3d at 767 n.6*.

[*601] These dosage opinions are consistent with Dr. Hammar's opinions in *Stephens*. There he "opined that the level of exposure it takes to cause mesothelioma 'could be any level above what is considered to be background, which, from my definition, would be anything greater than .1 fiber cc years.' In sum, he stated: 'I'm going to express an opinion that each and every exposure that an individual has in a bystander occupational setting causes their mesothelioma.'" *Stephens, 239 S.W.3d at 315*. He stated "that mesothelioma is a dose-responsive disease, and that a threshold exists 'above which you may be at risk, below which you may not be at risk' for developing [**33] the disease." *Id.*

In *Stephens*, there was no quantitative evidence of the plaintiff's exposure to Georgia-Pacific asbestos-containing joint compound, the product also at issue there. *Id. at 321*. Although the literature and scientific studies the experts relied upon supported a reasonable inference that exposure to chrysotile asbestos can increase a worker's risk of developing mesothelioma, none of those studies undertook the task of linking the minimum exposure level (or dosage) of joint compound with a statistically significant increased risk of developing of the disease. *Id.* Thus, the court held that the

opinions offered by the plaintiffs' experts, including Dr. Hammar, lacked the factual and scientific foundation required by *Flores* and were legally insufficient proof of substantial-factor causation necessary to support the jury's verdict. *Stephens, 239 S.W.3d at 321.*

According to John Maddox, M.D., the plaintiffs' expert regarding specific causation in *Smith*, "[b]ecause asbestos dust is so strongly associated with mesothelioma, proof of significant exposure to asbestos dust is proof of specific causation." *Smith, 307 S.W.3d at 837.* "Dr. Maddox opined that it is generally accepted in [**34] the scientific community that there is no minimum level of exposure to asbestos 'above background levels' below which adverse effects do not occur." *Id.* After discussing the scientific literature relied upon by Dr. Maddox, the court held that the plaintiffs' evidence "ultimately suffers the same defect as the plaintiff's in *Stephens*" and that under *Flores*, Dr. Maddox's opinion is insufficient as to specific causation. *Id. at 839.*

Here, appellees endeavor to rely on material practice simulation studies performed by their general causation expert, William Longo, Ph.D., a material scientist. Dr. Longo's simulation studies were intended to determine the amounts of asbestos fibers released during mixing, sanding, and sweeping Georgia-Pacific's (or its predecessor Bestwall's) asbestos-containing joint compound in a controlled environment. However, Dr. Longo admitted his studies could not establish an exposure level or dose for Timothy, particularly because of the many variables in the circumstances of a given work activity and location of the activity. Thus, Dr. Longo's testimony regarding the results of his material practice simulation studies do not quantify Timothy's exposure to asbestos [**35] fibers from Georgia-Pacific asbestos-containing joint compound.

On this record, appellees' evidence is insufficient to provide quantitative evidence of Timothy's exposure to asbestos fibers from Georgia-Pacific's asbestos-containing joint compound or to establish Timothy's exposure was in amounts sufficient to increase his risk of developing mesothelioma. Therefore, appellees' evidence is legally insufficient to establish substantial-factor causation mandated by *Flores*.

For the reasons discussed above, appellees' claims of negligence and product liability require proof of substantial-factor causation. *See Flores, 232 S.W.3d at 774.* [*602] We conclude that the evidence presented at trial is legally insufficient proof of substantial-factor causation necessary to support the jury's negligence and strict liability marketing defect verdicts against Georgia-Pacific. We sustain Georgia-Pacific's first issue.

APPELLANT'S SECOND AND THIRD ISSUES

In its second issue, Georgia-Pacific asserts that there was no clear and convincing evidence to support the jury's finding of Georgia-Pacific's gross negligence. Our disposition of Georgia-Pacific's first issue necessarily disposes of appellees' gross negligence [**36] claim against Georgia-Pacific. *See Transp. Ins. Co. v. Moriel, 879 S.W.2d 10, 23 (Tex.1994).*

Georgia-Pacific contends in its third issue that the trial court erred in denying its motion for mistrial and in vacating the order granting a new trial, warranting a remand of this case to the trial court. Our disposition of Georgia-Pacific's first issue makes it unnecessary to address Georgia-Pacific's third issue. *See Tex. R. App. P. 47.1.*

CONCLUSION

There is legally insufficient evidence of causation to support the verdict against Georgia-Pacific. We reverse the trial court's judgment and render judgment that appellees take nothing on their claims against Georgia-Pacific.

ROBERT M. FILLMORE

JUSTICE

TAB C

Court of Appeals
Fifth District of Texas at Dallas

JUDGMENT

GEORGIA-PACIFIC CORPORATION,
Appellant

No. 05-08-01390-CV V.

SUSAN ELAINE BOSTIC, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE HEIRS AND ESTATE OF TIMOTHY SHAWN BOSTIC, DECEASED; HELEN DONNAHOE; AND KYLE ANTHONY BOSTIC, Appellees

Appeal from the County Court at Law No. 1 of Dallas County, Texas. (Tr.Ct.No. cc-03-01977-A).
Opinion delivered by Justice Fillmore, Justices Bridges and FitzGerald participating.

In accordance with this Court's opinion of this date, the judgment of the trial court is **REVERSED**, and judgment is **RENDERED** that appellees Susan Elaine Bostic, Individually and as Personal Representative of the Estate of Timothy Shawn Bostic, Deceased, Helen Donnahoe, and Kyle Anthony Bostic take nothing on their claims against appellant Georgia-Pacific Corporation. It is **ORDERED** that appellant Georgia-Pacific Corporation recover its costs of this appeal from appellees Susan Elaine Bostic, Individually and as Personal Representative of the Estate of Timothy Shawn Bostic, Deceased, Helen Donnahoe, and Kyle Anthony Bostic.

Judgment entered August 26, 2010.

ROBERT M. FILLMORE
JUSTICE

REVERSE and RENDER and Opinion Filed August 26, 2010

In The
Court of Appeals
Fifth District of Texas at Dallas

No. 05-08-01390-CV

GEORGIA-PACIFIC CORPORATION, Appellant

V.

SUSAN ELAINE BOSTIC, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE HEIRS AND ESTATE OF TIMOTHY SHAWN BOSTIC, DECEASED; HELEN DONNAHOE; AND KYLE ANTHONY BOSTIC, Appellees

On Appeal from the County Court at Law No. 1
Dallas County, Texas
Trial Court Cause No. cc-03-01977-A

OPINION

Before Justices Bridges, FitzGerald, and Fillmore
Opinion By Justice Fillmore

Appellant Georgia-Pacific Corporation appeals the final judgment of the trial court in favor of appellees Susan Elaine Bostic, Individually and as Personal Representative of the Heirs and Estate of Timothy Shawn Bostic, Deceased, Helen Donnahoe, and Kyle Anthony Bostic. In three issues, Georgia-Pacific contends (1) there is legally insufficient evidence that Georgia-Pacific's joint compound caused Timothy Bostic's mesothelioma, (2) there is no evidence to support the jury's finding of gross negligence against Georgia-Pacific, and (3) the trial court abused its discretion by denying Georgia-Pacific's motion for mistrial and by vacating the order granting Georgia-Pacific

a new trial.

Concluding there is legally insufficient evidence of causation, we reverse the trial court's judgment and render judgment that appellees take nothing on their claims against Georgia-Pacific.

PROCEDURAL BACKGROUND

In February 2003, Timothy Bostic's wife, son, father, and mother brought wrongful death claims and a survival action against Georgia-Pacific and numerous other entities alleging Timothy's death was caused by exposure to asbestos. At the time of trial, Georgia-Pacific was the sole remaining defendant, the other named defendants having settled or been dismissed. Appellees alleged Georgia-Pacific was negligent, strictly liable for a product marketing defect, and grossly negligent.

In 2005, Judge Sally Montgomery presided over the trial of this lawsuit in Dallas County Court at Law No. 3. After the jury verdict awarding appellees actual and punitive damages, Judge Montgomery ordered appellees to either elect a new trial on all issues or agree to remit a misallocated award of future lost wages and the award of punitive damages. Appellees elected a new trial. The lawsuit was tried for the second time before a jury in 2006.[1] The jury returned a verdict in favor of appellees, finding Georgia-Pacific seventy-five percent liable and Knox Glass, Inc., a non-party former employer of Timothy, twenty-five percent liable for Timothy's death. The jury awarded $7,554,907 in compensatory damages and $6,038,910 in punitive damages.

Georgia-Pacific filed a motion to recuse Judge Montgomery. Judge M. Kent Sims granted the motion to recuse, and the lawsuit was transferred to Judge Russell H. Roden, Dallas County Court at Law No. 1. In December 2006, the trial court granted Georgia-Pacific's motion for mistrial and ordered a new trial.

---

[1] Harold Bostic, Timothy's father, died while the case was being retried.

In January 2007, Judge D'Metria Benson became the presiding judge of Dallas County Court at Law No. 1. In February 2008, appellees filed a motion to vacate Judge Roden's order granting a new trial and for entry of judgment. In July 2008, Judge Benson granted appellees' motion to vacate the order for new trial and signed a judgment based on the jury's June 2006 verdict. In October 2008, Judge Benson signed the amended final judgment awarding appellees $6,784,135.32 in compensatory damages and $4,831,128.00 in punitive damages. Georgia-Pacific appealed.

LEGAL SUFFICIENCY OF THE EVIDENCE

In its first issue, Georgia-Pacific asserts there is legally insufficient evidence that Georgia-Pacific asbestos-containing joint compound[2] caused Timothy's mesothelioma, a form of cancer usually linked to asbestos exposure. Georgia-Pacific asserts there is no evidence Timothy was exposed to Georgia-Pacific asbestos-containing joint compound, and even if there was evidence of exposure, there is no evidence of dose. Further, Georgia-Pacific asserts that even if there was evidence of exposure and dose, the record contains no epidemiological studies showing that persons similar to Timothy with exposure to asbestos-containing joint compound had an increased risk of developing mesothelioma. Georgia-Pacific also asserts that appellees' experts' theory that "each and every exposure" to asbestos caused Timothy's mesothelioma was rejected by the Texas Supreme Court in *Borg-Warner Corp. v. Flores*, 232 S.W.3d 765 (Tex. 2007).[3] Georgia-Pacific asserts that for each of these reasons, appellees' negligence and defective marketing claims against Georgia-

---

[2] Joint compound, sometimes called "drywall mud," is used to connect and smooth the seams of adjoining pieces of drywall, also called sheetrock, and to cover nail heads on sheets of drywall. Joint compound is spread in a thin coat and then smoothed. After it dries, uneven areas are further smoothed by sanding. This process is sometimes carried out multiple times in further refining the surface.

[3] Prior to the 2008 final judgment in this case, the Texas Supreme Court issued its *Flores* opinion on toxic tort law in asbestos cases, including specific causation. Like the instant appeal, in *Georgia-Pacific Corp. v. Stephens*, 239 S.W.3d 304 (Tex. App. Houston [1st Dist.] 2007, pet. denied), issued after *Flores*, the asbestos trial occurred before the *Flores* decision, but the appellate court was bound by *Flores*. *Stephens*, 239 S.W.3d at 321; *see also Smith v. Kelly-Moore Paint Co.*, 307 S.W.3d 829, 834 (Tex. App. Fort Worth 2010, no pet.) (appellate court bound by *Flores* as supreme court precedent); *Lubbock City v. Trammel's Lubbock Bail Bonds*, 80 S.W.3d 580, 585 (Tex. 2002) (once supreme court announces proposition of law, that proposition is binding precedent and may not be modified or abrogated by court of appeals).

Pacific fail as a matter of law.

When, as here, an appellant attacks the legal sufficiency of an adverse finding on an issue on which it did not have the burden of proof, it must demonstrate that no evidence supports the finding. *Croucher v. Croucher*, 660 S.W.2d 55, 58 (Tex. 1983). "The final test for legal sufficiency must always be whether the evidence at trial would enable reasonable and fair-minded people to reach the verdict under review." *Del Lago Partners, Inc. v. Smith*, 307 S.W.3d 762, 770 (Tex. 2010) (quoting *City of Keller v. Wilson*, 168 S.W.3d 802, 827 (Tex. 2005)). We review the evidence in the light most favorable to the verdict, crediting favorable evidence if reasonable jurors could and disregarding contrary evidence unless reasonable jurors could not. *Del Lago Partners*, 307 S.W.3d at 770.

Asbestos Exposure

In 2002, Timothy was diagnosed with mesothelioma at the age of forty. He died in 2003. Appellees claim Timothy's mesothelioma was caused by his exposure to asbestos-containing joint compound manufactured by Georgia-Pacific. Georgia-Pacific acknowledged there is some evidence that Timothy used or was present during the use of joint compound between 1967 and 1977, but contends there is no evidence of exposure to Georgia-Pacific asbestos-containing joint compound. *See Gaulding v. Celotex Corp.*, 772 S.W.2d 66, 68 (Tex. 1989) (fundamental principle of products liability law is plaintiff must prove defendant supplied product which caused injury).

Georgia-Pacific manufactured and sold joint compound products that included chrysotile asbestos[4] fibers from the time it acquired Bestwall Gypsum Company in 1965 until 1977, when

---

[4] Chrysotile is the most abundant type of asbestos fiber and is a serpentine fiber consisting of "pliable curly fibrils which resemble scrolled tubes." *Flores*, 232 S.W.3d at 766 n.4 (citing Lee S. Siegel, Note, *As the Asbestos Crumbles: A Look at New Evidentiary Issues in Asbestos Related Property Damage Litigation*, 20 HOFSTRA L. REV. 1139, 1149 (1992)); *Smith*, 307 S.W.3d at 832 n.3. The remaining commercial types of asbestos fibers are amphiboles, which include amosite and crocidolite. *Smith*, 307 S.W.3d at 832, 837; *Bartel v. John Crane, Inc.*, 316 F. Supp.2d 603, 606 (N.D. Ohio 2004), *aff'd*, 424 F.3d 488 (6th Cir. 2005).

Georgia-Pacific ceased marketing asbestos-containing joint compound. Those Georgia-Pacific joint compounds were offered in a dry mix formula and a pre-mixed formula.[5] The parties do not dispute that any exposure of Timothy to a Georgia-Pacific asbestos-containing joint compound would have occurred between 1967 and 1977. Evidence regarding Timothy's work with or around Georgia-Pacific asbestos-containing joint compound in this ten-year period came from Timothy's and Harold Bostic's deposition testimony read and played by videotape at trial and Timothy's work history sheets.

Timothy testified he had been around drywall work his entire life, and he recalled that before the age of ten, he observed his father performing drywall work. He stated he mixed and sanded joint compound from the age of five. He testified he recalled at a young age helping his father "mud the holes" with joint compound. While he did not provide any more specifics of drywall work he performed with his father before 1977, he believed he used and was exposed to Georgia-Pacific joint compound before he graduated from high school in 1980. Timothy's work history sheets also indicate he worked with and around other brands of asbestos-containing joint compounds.

Timothy's work history sheets also assert exposure to asbestos fibers from Georgia-Pacific joint compound as a result of household exposure to Harold's clothing. This alleged exposure would have occurred prior to his parents' divorce in 1972, when he was ten years old, and thereafter when he stayed with his father on weekends, holidays, and at times in the summer.

Harold testified he used Georgia-Pacific joint compound ninety-eight percent of the time that he did drywall work. He testified he tried one or two other brands of joint compound, but he always returned to Georgia-Pacific's product. With one exception listed below, Harold said he could not positively associate Georgia-Pacific's product with any specific drywall job. He stated he knew he

---

[5] Dust containing asbestos fibers could be released by sanding or sweeping either formula and by mixing the dry formula

had used Georgia-Pacific's product on several jobs, but he could not recall exactly where. Harold testified that Timothy began to accompany him on remodeling jobs in 1967 when Timothy was the age of five. Timothy helped mix joint compound, applied and sanded joint compound to the height Timothy could reach, and breathed in the dust from sanded joint compound.

According to his testimony, Harold worked part-time on only one remodeling or construction job at a time for a family member or friend. Each project took a lengthy period of time to complete. Although he testified there was no doubt in his mind that he and Timothy used Georgia-Pacific joint compound "many, many times" between 1967 and 1977, he identified and described work performed on eight remodeling projects for the relevant period. Harold identified only one specific project where Georgia-Pacific joint compound was used, and he could not recall whether Timothy performed drywall work or was present during drywall work on that project. Only three projects were identified in which Harold and Timothy may have performed drywall work together or Timothy may have been present when Harold performed drywall work. Following is a summary chronology of the remodeling or construction jobs Harold recalled for this relevant period:

- In the house he lived in with his wife and Timothy, Harold performed drywall work while remodeling a utility room. Timothy was four or five years of age at the time and may have played in the joint compound "mud" or sanded drywall to the height he could reach.

- During the course of a three-month project, Harold built a ten foot by ten foot bathroom and dressing room in his brother's house. Harold performed drywall work as part of the project. He could not recall the brand of joint compound he utilized. Timothy performed sewer work on this project. Timothy was six or seven years of age.

- Harold remodeled the interior of his sister's service station. The project lasted a year in 1968 or 1970. Harold performed drywall work on an eight foot by seven foot room and the ceiling of the room. Timothy was between the ages of six and eight.

- Harold built living quarters in a friend's garage and car dealership. This year-long project included drywall work. He has no memory of Timothy working with drywall on this project.

- In connection with the construction of the interior of a friend's prefabricated home, Harold performed drywall work. The construction project took a year to complete. Harold recalled

utilizing Georgia-Pacific joint compound, but he did not recall whether Timothy performed drywall work or whether Timothy was present when Harold performed drywall work. Timothy dug the septic tank on this project. Timothy was between the ages of ten and twelve.

- In finishing a room in his sister's newer home, Harold could not recall utilizing drywall. Timothy was eleven or twelve years of age.

- During a year-long construction project, Harold performed drywall work in his sister's five hundred square foot older home.

- In building partitions in his mother's home, Harold recalled that he may have patched some cracks, but he did not perform drywall work and he could not recall using joint compound. Timothy was thirteen or fourteen years of age.

Evidence at trial substantiated Timothy was exposed to asbestos other than through use of or presence during the use of Georgia-Pacific asbestos-containing joint compound. In addition to Georgia-Pacific joint compound, the evidence established and appellees acknowledge that Timothy was exposed to numerous asbestos products and asbestos-containing products, both occupationally and through household and bystander exposure.

Timothy was exposed to asbestos utilized at Knox Glass. Harold was employed as a welder at Knox Glass from around 1960 until the plant closed in 1984. Asbestos and asbestos-containing products were used throughout the glass container factory, particularly to insulate against heat. Harold was exposed to asbestos fibers, which were inadvertently brought home on his clothing, thereby exposing Timothy. These household exposures to asbestos occurred consistently from Timothy's birth until his parents were divorced when he was ten years old, from time spent with Harold on weekends, holidays, and in the summers between the ages of ten and fifteen, and from the ages of fifteen to eighteen when Timothy lived with Harold.

Timothy was further exposed to asbestos utilized at Knox Glass in connection with his janitorial and mechanical work at Knox Glass in the summer months of 1980 through 1982.[6] He worked in both the hot end of the plant, where glass bottles were manufactured and where asbestos was more likely prevalent, and in the cold end of the plant.[7] The evidence indicated that asbestos or asbestos-containing items in the work environment at Knox Glass included refractory cements, fireproofing, asbestos cloth, pumps, packing (braided rope made from asbestos), valves, furnaces, blow heads, gaskets, and firebrick mortar. Timothy's work responsibilities included cutting raw asbestos cloth, sweeping up asbestos-containing dust, cleaning up after asbestos pipe coverings were repaired, removing flaking asbestos from machines and replacing it with asbestos he cut, and wearing asbestos gloves or mittens.

Timothy also had occupational exposure to asbestos during 1977 and 1978, when he worked for approximately six months as a welder's assistant for Palestine Contractors. There he was exposed to asbestos while removing gaskets and asbestos pipe insulation three to four times each week.

Timothy was also exposed to asbestos fibers as a result of mechanical work Harold performed on automobiles, including brake work. Timothy was exposed in the household to asbestos fibers on Harold's clothing and as a bystander and assistant to his father with respect to the automotive repairs. In addition, when he was older, Timothy performed mechanical work on vehicles resulting in exposure to a number of asbestos-containing products, including clutches, brake pads and linings, friction products, and gaskets. He testified that he performed approximately four

---

[6] In 1988, Timothy and Harold underwent testing to determine whether they had contracted an asbestos-related disease as a result of working at Knox Glass. A bronchial alveolar lavage (BAL) was performed on each of them to determine what type of fiber exposures had occurred. Two chrysotile and two amosite asbestos fibers were found in Timothy's BAL. There were additional fibers that were not asbestos that could not be identified. Three amosite asbestos fibers were found in Harold Bostic's BAL.

[7] Timothy testified he worked summer months at Knox Glass in 1980, 1981, and 1982. Appellees seek to narrow the time period of exposure to asbestos and asbestos-containing products to three months by asserting that to be the cumulative amount of time Timothy worked in the hot end of the plant.

brake jobs a year and fewer than ten clutch jobs in his lifetime. Timothy identified a number of manufacturers of asbestos-containing products he was exposed to in connection with the mechanical work he performed.

After his graduation from high school, Timothy began remodeling homes on his own. According to the evidence, he was exposed to a number of asbestos-containing products in his remodeling work, including roofing shingles, floor tiles, and ceiling tiles. Timothy identified several manufacturers and marketers of asbestos-containing products he utilized in addition to Georiga-Pacific joint compounds. It is not disputed that Timothy used Georgia-Pacific products after his graduation from high school in 1980. However, these uses occurred after Georgia-Pacific joint compounds no longer contained asbestos.

Albeit limited, the record contains evidence through the lay testimony of Timothy and Harold, and Timothy's work history sheets, of Timothy's use or presence during the use of Georgia-Pacific's asbestos-containing joint compound. On this record, we disagree with Georgia-Pacific's argument that there is no evidence Timothy was exposed to Georgia-Pacific asbestos-containing joint compound.

Substantial-Factor Causation

Georgia-Pacific next contends there is legally insufficient evidence of causation, an essential element of appellees' negligence and strict liability defective marketing claims. In a toxic tort case, the plaintiff must show both general and specific causation. *See Merrell Dow Pharm., Inc. v. Havner*, 953 S.W.2d 706, 714–15, 720 (Tex. 1997). "General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether a substance caused a particular individual's injury." *Havner*, 953 S.W.2d at 714; *see also Georgia-Pacific Corp. v. Stephens*, 239 S.W.3d 304, 308–09 (Tex. App.-Houston [1st Dist.] 2007,

pet. denied). For purposes of this appeal, Georgia-Pacific is not challenging the legal sufficiency of the evidence of general causation that inhalation of chrysotile asbestos fibers can cause mesothelioma. Instead, Georgia-Pacific challenges the legal sufficiency of the evidence as to specific causation, that is whether Georgia-Pacific asbestos-containing joint compound was, in fact, a cause of Timothy's mesothelioma.

Causation

Georgia-Pacific contends that appellees failed to introduce evidence sufficient to satisfy the "substantial factor" standard of causation set forth in *Flores*, because appellees produced no evidence of cause-in-fact. In the context of an asbestos case, the Texas Supreme Court explained that "asbestos in the defendant's product [must be] a substantial factor in bringing about the plaintiff's injuries." *Flores*, 232 S.W.3d at 770. The *Flores* court agreed that the "frequency, regularity, and proximity" test for exposure to asbestos set out in *Lohrmann v. Pittsburgh Corning Corp.*, 782 F.2d 1156 (4th Cir.1986), is appropriate. *Flores*, 232 S.W.3d at 769; *see also Lohrmann*, 782 F.2d at 1162–63 (to support reasonable inference of substantial causation from circumstantial evidence, there must be evidence of exposure to specific product on regular basis over extended period of time in proximity to where plaintiff actually worked). The supreme court stated, however, that the terms "frequency," "regularity," and "proximity" do not "capture the emphasis [Texas] jurisprudence has placed on causation as an essential predicate to liability," and agreed with *Lohrmann*'s analysis that the asbestos exposure must be a substantial factor in causing the asbestos-related disease. *Flores*, 232 S.W.3d at 769; *see also Lohrmann*, 782 F.2d at 1162.

Causation is an essential element of appellees' claims for negligence and product marketing defect. Proximate cause is an element of a negligence claim, while producing cause is an element of a strict liability claim. *Gen. Motors Corp. v. Saenz*, 873 S.W.2d 353, 357 (Tex. 1993). "Both

producing and proximate cause contain the cause-in-fact element, which requires that the defendant's act be a 'substantial factor in bringing about the injury and without which the harm would not have occurred.'" *Metro Allied Ins. Agency, Inc. v. Lin*, 304 S.W.3d 830, 835 (Tex. 2009) (quoting *Doe v. Boys Clubs of Greater Dallas, Inc.*, 907 S.W.2d 472, 481 (Tex. 1985)); *see also Flores*, 232 S.W.3d at 770 (quoting RESTATEMENT (SECOND) OF TORTS § 431 cmt. a (1965)) ("substantial" used to denote the fact that the defendant's conduct has such an effect in producing harm as to lead reasonable men to regard it as a cause); *Prudential Ins. Co. of Am. v. Jefferson Assocs., Ltd.*, 896 S.W.2d 156, 161 (Tex. 1995); *Patino v. Complete Tire, Inc.*, 158 S.W.3d 655, 661 (Tex. App.–Dallas 2005, pet. denied).

Appellees assert that *Flores* does not require "but-for" causation in proving specific causation and that *Flores* requires only that appellees prove Timothy's exposure to Georgia-Pacific asbestos-containing joint compound was a "substantial factor" in contributing to his risk of mesothelioma. We disagree. The Texas Supreme Court "[has] recognized that '[c]ommon to both proximate and producing cause is causation in fact, including the requirement that the defendant's conduct or product be a substantial factor in bringing about the plaintiff's injuries.'" *Flores*, 232 S.W.3d at 770 (quoting *Union Pump Co. v. Allbritton*, 898 S.W.2d 773, 775 (Tex. 1995)); *see also Ford Motor Co. v. Ledesma*, 242 S.W.3d 32, 46 (Tex. 2007).

Thus, to establish substantial-factor causation, a plaintiff must prove that the defendant's conduct was a cause-in-fact of the harm. *See Flores*, 232 S.W.3d at 770. "In asbestos cases, then, we must determine whether the asbestos in the defendant's product was a substantial factor in bringing about the plaintiff's injuries" and without which the injuries would not have occurred. *Id.*; *see also Stephens*, 239 S.W.3d at 308–09.

Appellees acknowledged in their brief and at oral submission that their only expert who opined on specific causation of Timothy's mesothelioma was pathologist Samuel Hammar, M.D. However, Dr. Hammar testified he could not opine that Timothy would not have developed mesothelioma absent exposure to Georgia-Pacific asbestos-containing joint compound. Because a plaintiff must prove that the defendant's conduct was a cause-in-fact of the harm, appellees' evidence is insufficient to satisfy the required substantial-factor causation element for maintaining this negligence and product liability suit. *See Flores*, 232 S.W.3d at 770.

"Each and Every Exposure" Theory of Causation

Georgia-Pacific argues that appellees further failed to establish substantial-factor causation because they improperly based their showing of causation on the opinion of their only specific causation expert that each and every exposure to asbestos caused or contributed to cause Timothy's mesothelioma. Georgia-Pacific contends the law set forth in *Flores* and *Stephens* rejects the theory that each and every exposure to asbestos contributes to the development of mesothelioma. *See Flores*, 232 S.W.3d at 773; *Stephens*, 239 S.W.3d at 311, 314–15, 321 (in *Flores*, Texas Supreme Court rejected "any exposure" test for specific causation and adopted substantial-factor causation standard). Therefore, Georgia-Pacific asserts there is no evidence of the essential element of causation to support appellees' negligence or defective marketing claims against Georgia-Pacific.

Quoting from the underlying court of appeals decision, the *Flores* court expressly rejected the "each and every exposure" theory of liability:

> [Plaintiff's expert] acknowledged that asbestos is "plentiful" in the ambient air and that "everyone" is exposed to it. If a single fiber could cause asbestosis, however, "everyone" would be susceptible. No one suggests this is the case. . . . In analyzing the legal sufficiency of Flores's negligence claim, then, the court of appeals erred in holding that "[i]n the context of asbestos-related claims, if there is sufficient evidence that the defendant supplied *any* of the asbestos to which a plaintiff was exposed, then the plaintiff has met the burden of proof."

Flores, 232 S.W.3d at 773 (emphasis in original). Instead, as discussed previously in this opinion, the Texas Supreme Court requires the plaintiff to prove "that the defendant's product was a substantial factor in causing the alleged harm." *Id.*

In *Stephens*, Dr. Hammar, appellees' specific causation expert here, "express[ed] an opinion that each and every exposure that an individual has in a bystander occupational setting causes their mesothelioma." *Stephens*, 239 S.W.3d at 315. Dr. Hammar testified that any exposure the deceased commercial painter had throughout the time he worked was causative of his mesothelioma. *Id.* at 320. The plaintiffs in *Stephens* also relied on the testimony of Jerry Lauderdale, an industrial hygienist. *Id.* at 314. Lauderdale testified that asbestos-related diseases are based on cumulative exposures and that there is no way to isolate a particular exposure that caused development of the disease. *Id.* at 315. It was Lauderdale's opinion "that every exposure does contribute to the development of—potential to develop mesothelioma." *Id.* The court noted that the experts failed to show that "the 'any exposure' theory is generally accepted in the scientific community—that any exposure to a product that contains asbestos results in a statistically significant increase in the risk of developing mesothelioma." *Id.* at 320–21. Consistent with *Flores*, the "each and every exposure" theory was rejected in *Stephens*. *Id.* at 314–15, 320–21.

In this case, appellees' specific causation expert, Dr. Hammar, testified that asbestos-related diseases are dose-related diseases, meaning that asbestos exposures comprising the cumulative dose, at least to the point of the first cancer cell's development, are all causative or potentially causative of the disease. He opined, to a reasonable degree of medical probability, that each and every exposure to asbestos would be a significant contributing, or at least a potentially contributing, factor to the development of mesothelioma. Dr. Hammar agreed that each and every exposure Timothy had to asbestos was significant and a contributing factor in the development of his mesothelioma.

These exposures would include Timothy's use of or exposure to asbestos during his employment at Knox Glass, his bystander exposure, and his household exposure to asbestos fibers Harold inadvertently brought home on his clothing from Knox Glass and from his part-time mechanical and construction work.

At oral submission, appellees stated that while not experts on the specific cause of Timothy's disease, their other experts at trial supported Dr. Hammar's testimony. Appellees' experts at trial on general causation, Arnold R. Brody, Ph.D., an experimental pathologist with a doctorate in cell biology, and Richard Lemen, Ph.D., an epidemiologist, espoused the "each and every exposure" theory. Dr. Brody testified that each and every asbestos fiber a person inhales is considered a cause of or a substantial contributing factor to mesothelioma. Dr. Lemen testified that with each and every exposure to asbestos, and each and every inhalation of asbestos fibers, the fibers add to the total body burden of exposure and contribute to the development of mesothelioma.

In their effort to demonstrate evidence of substantial-factor causation, appellees also refer to the testimony of Richard Kronenberg, M.D., a witness called to testify by Georgia-Pacific. Dr. Kronenberg testified that asbestos diseases result from a total accumulated exposure over a lifetime. He stated that each and every exposure would be a significant contributing factor to an asbestos disease, and that all the exposures throughout Timothy's life working with any sort of asbestos-containing products contributed to the development of his disease.

The Texas Supreme Court has determined that an "each and every exposure" theory is legally insufficient to support a finding of causation. *Flores*, 232 S.W.3d at 773. We agree with Georgia-Pacific's assertion that appellees did not establish substantial-factor causation to the extent they improperly based their showing of specific causation on their expert's testimony and the testimony of Dr. Kronenberg that each and every exposure to asbestos caused or contributed to cause

Timothy's mesothelioma.

Frequency, Proximity, and Regularity of Exposure

Appellees contend that Georgia-Pacific misstates the facts in asserting the appellees' expert relied on the "each and every exposure" theory in support of substantial-factor causation. Instead, appellees assert that in accordance with the substantial-factor causation standard, they presented "substantial evidence of Timothy's ten years of frequent, proximate, and regular exposure to Georgia-Pacific asbestos joint compound. . . ."

Appellees contend that Timothy "used Georgia-Pacific asbestos joint compound 'many times' over ten years." Appellees assert that "[t]aking into account the frequency, proximity, and regularity of Timothy's exposure to Georgia-Pacific's joint compound," Dr. Hammar testified that Timothy's exposure to Georgia-Pacific asbestos joint compound would have been sufficient in and of itself to cause his mesothelioma.

It was Dr. Hammar's understanding that from an early age with his father, and then as he grew older, Timothy "did a fair amount of work with the drywall work" and he testified Timothy was exposed to asbestos during mixing, sanding, and cleaning up of drywall materials. Dr. Hammar testified he had reviewed Timothy's work history sheets "which chronicled Timothy's work history and what he had actually done during his life." But he acknowledged that work history sheets do not tell "the time of exposure and the intensity of the exposure the individual had." Further, he had not reviewed the deposition testimony of Timothy or Harold, although he acknowledged that deposition testimony provides more details of the nature and amount of exposure than work history sheets.

As is detailed above, the record does not contain "substantial" evidence of Timothy's frequent use of or exposure to Georgia-Pacific joint compound for the period 1967 to 1977 and does

not establish Timothy's use of the joint compound "many times" over that period.[8] In fact, the evidence regarding Timothy's exposure to asbestos-containing joint compound and the number of times it occurred during the period 1967 to 1977 belies an assertion of exposure occurring "many times" and belies the information contained in Timothy's work history sheets reviewed by Dr. Hammar.[9]

We disagree with appellees' contention that Georgia-Pacific is incorrect in arguing appellees relied on the "each and every exposure" theory to support substantial-factor causation. We also disagree with appellees' contention that, instead, they presented "substantial evidence of Timothy's ten years of frequent, proximate, and regular exposure to Georgia-Pacific asbestos joint compound" to establish substantial-factor causation. *See Jackson v. Anchor Packing Co.*, 994 F.2d 1295, 1308 (8th Cir. 1993) (although worker testified he worked with gaskets and packets "many times" during years as mechanic, no evidence in record that he used gaskets many times and cannot tell whether he used products "for two jobs or two hundred jobs"); *Lohrmann*, 782 F.2d at 1163 (ten to fifteen occasions of exposure to asbestos-containing pipe covering lasting between one and eighteen hours duration insufficient to satisfy frequency-regularity-proximity test). On this record, there is insufficient evidence of Timothy's frequent and regular exposure to Georgia-Pacific's asbestos-containing joint compound during the relevant time period.

---

[8] Appellees further assert that Timothy's exposure to Georgia-Pacific asbestos-containing joint compound "was far greater than any other asbestos exposure." This is apparently based on appellees "quantifying the ratio of [Timothy's] exposure to Georgia-Pacific asbestos joint compound as compared to his other exposures," which according to appellees was "ten years of Georgia-Pacific asbestos joint compound versus three months of exposure at Knox-Glass [sic], six months at Palestine Contractors, potential household exposure, and sporadic brake work." Without endorsing this methodology, we conclude this argument is inapposite to the "frequency, proximity, and regularity" test associated with substantial-factor causation.

[9] According to Timothy's work history sheets, for a period of over thirty years from the early 1970s, Timothy was exposed to asbestos fibers from Georgia-Pacific joint compounds through his work with or around them as a self-employed carpenter with a workweek of over forty hours, at various residences with Harold as a coworker, and through household exposure resulting from Harold's work as a carpenter.

Quantitative Evidence that Exposure Increased Risk of Developing Mesothelioma

Georgia-Pacific also contends that appellees failed to establish substantial-factor causation because there is no evidence of the quantitative exposure (dose) of asbestos fibers from Georgia-Pacific asbestos-containing joint compound to which Timothy was exposed, and because appellees failed to present evidence of the minimum exposure level leading to an increased risk of development of mesothelioma.

As set forth in *Flores*, *Stephens*, and *Smith*, the "each and every exposure" theory and the theory that there is no level of asbestos exposure below which the potential to develop mesothelioma is not present have been rejected. *See Flores*, 232 S.W.3d at 769–70, 773; *Smith v. Kelly-Moore Paint Co.*, 307 S.W.3d 829, 837 n.9, 839 (Tex. App.–Fort Worth, 2010, no pet.); *Stephens*, 239 S.W.3d at 311, 314–15. In order to prove substantial factor causation, a plaintiff must not only show frequency, regularity, and proximity of exposure to the product, the plaintiff must also show reasonable quantitative evidence that the exposure increased the risk of developing the asbestos-related injury. *Flores*, 232 S.W.3d at 769–72; *Smith*, 307 S.W.3d at 833; *Stephens*, 239 S.W.3d at 312. "Because most chemically induced adverse health effects clearly demonstrate 'thresholds,' there must be reasonable evidence that the exposure was of sufficient magnitude to exceed the threshold before a likelihood of 'causation' can be inferred." *Flores*, 232 S.W.3d at 773 (quoting David L. Eaton, *Scientific Judgment and Toxic Torts–A Primer in Toxicology for Judges and Lawyers*, 12 J.L. & POL'Y 5, 39 (2003)).

Flores mandates that a showing of substantial-factor causation include quantitative evidence that Timothy's exposure to asbestos increased his risk of developing an asbestos-related injury. *See Flores*, 232 S.W.3d at 772. Thus, the evidence had to not only show Timothy's exposure to Georgia-Pacific asbestos-containing product on a frequent and regular basis, but also that the exposure was

in sufficient amounts to increase his risk of developing mesothelioma. *Id.* at 769-70.

Appellees contend their specific causation expert, Dr. Hammar, "analyzed the mathematical threshold of asbestos exposure leading to a multiple increased risk of mesothelioma, and testified that Timothy's ten year exposure to Georgia-Pacific asbestos joint compound would have been enough in and of itself to cause his mesothelioma." They state Dr. Hammar considered the threshold for increased risk of developing mesothelioma to be 0.1 fiber cc,[10] and considered the frequency, regularity, and fiber concentration of Timothy's ten years of exposure to Georgia-Pacific asbestos-containing joint compound, and testified, within a reasonable degree of medical certainty, that these exposures were sufficient, in and of themselves, to have caused Timothy's mesothelioma.

Dr. Hammar testified he does not know of any safe level of exposure to asbestos under which disease does not occur. He opined that exposure to friable[11] asbestos fibers above background levels had the potential to contribute to the development of Timothy's mesothelioma. It is his opinion that every exposure above .1 fiber cc contributes to the development of mesothelioma. He stated that information published in the Federal Register shows that at .1 fiber cc, statistically there are seven cases of mesothelioma per year.

These dosage opinions are consistent with Dr. Hammar's opinions in *Stephens*. There he "opined that the level of exposure it takes to cause mesothelioma 'could be any level above what is considered to be background, which, from my definition, would be anything greater than .1 fiber cc years.' In sum, he stated: 'I'm going to express an opinion that each and every exposure that an individual has in a bystander occupational setting causes their mesothelioma.'" *Stephens*, 239

---

10 "Asbestos exposure is generally measured in fibers per cubic centimeter (fibers/cc) on an eight hour weighted average. This is calculated by taking the amount of time an individual is exposed to asbestos and mathematically calculating a time weighted average over an eight hour day . . . In all urban environments, there is a level of asbestos in the ambient air. This level, often called the background level, varies from location to location and ranges from .000001 to .01 fiber/cc." *Bartel*, 316 F. Supp. at 607.

11 "'Friable' refers to breathable asbestos." *See Flores*, 232 S.W.3d at 767 n6.

S.W.3d at 315. He stated "that mesothelioma is a dose-responsive disease, and that a threshold exists 'above which you may be at risk, below which you may not be at risk' for developing the disease." *Id.*

In *Stephens*, there was no quantitative evidence of the plaintiff's exposure to Georgia-Pacific asbestos-containing joint compound, the product also at issue there. *Id.* at 321. Although the literature and scientific studies the experts relied upon supported a reasonable inference that exposure to chrysotile asbestos can increase a worker's risk of developing mesothelioma, none of those studies undertook the task of linking the minimum exposure level (or dosage) of joint compound with a statistically significant increased risk of developing of the disease. *Id.* Thus, the court held that the opinions offered by the plaintiffs' experts, including Dr. Hammar, lacked the factual and scientific foundation required by *Flores* and were legally insufficient proof of substantial-factor causation necessary to support the jury's verdict. *Stephens*, 239 S.W.3d at 321.

According to John Maddox, M.D., the plaintiffs' expert regarding specific causation in *Smith*, "[b]ecause asbestos dust is so strongly associated with mesothelioma, proof of significant exposure to asbestos dust is proof of specific causation." *Smith*, 307 S.W.3d at 837. "Dr. Maddox opined that it is generally accepted in the scientific community that there is no minimum level of exposure to asbestos 'above background levels' below which adverse effects do not occur." *Id.* After discussing the scientific literature relied upon by Dr. Maddox, the court held that the plaintiffs' evidence "ultimately suffers the same defect as the plaintiff's in *Stephens*" and that under *Flores*, Dr. Maddox's opinion is insufficient as to specific causation. *Id.* at 839.

Here, appellees endeavor to rely on material practice simulation studies performed by their general causation expert, William Longo, Ph.D., a material scientist. Dr. Longo's simulation studies were intended to determine the amounts of asbestos fibers released during mixing, sanding, and

sweeping Georgia-Pacific's (or its predecessor Bestwall's) asbestos-containing joint compound in a controlled environment. However, Dr. Longo admitted his studies could not establish an exposure level or dose for Timothy, particularly because of the many variables in the circumstances of a given work activity and location of the activity. Thus, Dr. Longo's testimony regarding the results of his material practice simulation studies do not quantify Timothy's exposure to asbestos fibers from Georgia-Pacific asbestos-containing joint compound.

On this record, appellees' evidence is insufficient to provide quantitative evidence of Timothy's exposure to asbestos fibers from Georgia-Pacific's asbestos-containing joint compound or to establish Timothy's exposure was in amounts sufficient to increase his risk of developing mesothelioma. Therefore, appellees' evidence is legally insufficient to establish substantial-factor causation mandated by *Flores*.

For the reasons discussed above, appellees' claims of negligence and product liability require proof of substantial-factor causation. *See Flores*, 232 S.W.3d at 774. We conclude that the evidence presented at trial is legally insufficient proof of substantial-factor causation necessary to support the jury's negligence and strict liability marketing defect verdicts against Georgia-Pacific. We sustain Georgia-Pacific's first issue.

APPELLANT'S SECOND AND THIRD ISSUES

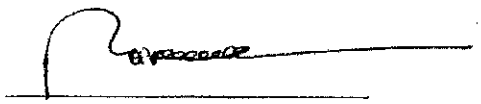
In its second issue, Georgia-Pacific asserts that there was no clear and convincing evidence to support the jury's finding of Georgia-Pacific's gross negligence. Our disposition of Georgia-Pacific's first issue necessarily disposes of appellees' gross negligence claim against Georgia-Pacific. *See Transp. Ins. Co. v. Moriel*, 879 S.W.2d 10, 23 (Tex.1994).

Georgia-Pacific contends in its third issue that the trial court erred in denying its motion for mistrial and in vacating the order granting a new trial, warranting a remand of this case to the trial

court. Our disposition of Georgia-Pacific's first issue makes it unnecessary to address Georgia-Pacific's third issue. *See* Tex. R. App. P. 47.1.

CONCLUSION

There is legally insufficient evidence of causation to support the verdict against Georgia-Pacific. We reverse the trial court's judgment and render judgment that appellees take nothing on their claims against Georgia-Pacific.



ROBERT M. FILLMORE
JUSTICE

081390F.P05

TAB D

BORG-WARNER CORPORATION, NOW KNOWN AS BURNS INTERNATIONAL SERVICES CORPORATION, PETITIONER, v. ARTURO FLORES, RESPONDENT

NO. 05-0189

SUPREME COURT OF TEXAS

232 S.W.3d 765*; *2007 Tex. LEXIS 528*; *50 Tex. Sup. J. 851*; *37 ELR 20137

September 29, 2006, Argued
June 8, 2007, Opinion Delivered

SUBSEQUENT HISTORY: Released for Publication October 12, 2007.
Rehearing denied by *Borg-Warner Corp. v. Flores, 2007 Tex. LEXIS 930 (Tex., Oct. 12, 2007)*

PRIOR HISTORY: [**1]
ON PETITION FOR REVIEW FROM THE COURT OF APPEALS FOR THE THIRTEENTH DISTRICT OF TEXAS.
Borg-Warner Corp. v. Flores, 153 S.W.3d 209, 2004 Tex. App. LEXIS 11327 (Tex. App. Corpus Christi, 2004)

COUNSEL: For Borg-Warner Corporation, PETITIONER: Hon. Deborah G. Hankinson, Ms. Elana S. Einhorn, Law Offices of Deborah Hankinson PC, Dallas, TX.; Ms. Elizabeth L. Phifer, Smith Underwood & Perkins, P.C., Dallas, TX.; Mr. Rene Luis Obregon, San Benito, TX.

For Arturo Flores, RESPONDENT: Mr. Scott W. Wert, Foster & Sear LLP, Arlington, TX.; Mr. Brent M. Rosenthal, Ms. Misty Ann Farris, Mr. Kevin Duane McHargue, Baron & Budd, P.C., Dallas, TX.

For Owens Illinois, Inc., AMICUS CURIAE: Mr. Joe R. Greenhill, Baker Botts LLP, Austin, TX.

For The Goodyear Tire & Rubber Company, AMICUS CURIAE: Mr. David A. Oliver, Jr., Porter & Hedges, L.L.P., Houston, TX.

For Exxon Mobil Corporation, AMICUS CURIAE: Mr. Reagan W. Simpson, King & Spalding LLP, Houston, TX.

For Centerpoint Energy Inc. and Eastman Chemical Company, AMICUS CURIAE: Ms. Sandra Thourot Krider, Edwards Burns & Krider LLP, Houston, TX.

For Coalition for Litigation Justice, Inc., AMICUS CURIAE: Mr. David A. Chaumette, Shook, Hardy & Bacon, L.L.P., Houston, TX.

JUDGES: CHIEF JUSTICE JEFFERSON delivered the opinion of the Court. JUSTICE O'NEILL did not participate in the decision.

OPINION BY: Wallace B. Jefferson

OPINION

[*765] Nearly ten years ago, we observed that asbestos litigation had reached maturity. *In re Ethyl Corp., 975 S.W.2d 606, 610 (Tex. 1998)*. Even mature claims evolve, however, and courts have continued to struggle with the appropriate parameters for lawsuits alleging asbestos-related injuries. [1] While science has confirmed the [*766] threat posed by asbestos, we have not had the occasion to decide whether a person's exposure to "some" respirable fibers is sufficient to show that a product containing asbestos was a substantial factor in causing asbestosis. Because we conclude that it is not,

we reverse the court of appeals' judgment and render judgment for the petitioner.

1 In 2005, Texas, like Louisiana and Ohio before it, adopted a medical criteria statute governing claims for injuries resulting from asbestos or silica. Act of May 16, 2005, 79th Leg., R.S., ch. 97, § 2, 2005 Tex. Gen. Laws 169, 171-79 (now codified at *TEX. CIV. PRAC. & REM. CODE ch. 90*); *see also* STEPHEN J. CARROLL [**2] ET AL., RAND INSTITUTE FOR CIVIL JUSTICE, ASBESTOS LITIGATION 132 (2005). The trial in this case occurred before the statute was passed and was not, therefore, governed by its provisions.

I

Factual and Procedural Background

Sixty-six-year-old Arturo Flores is a retired brake mechanic. Flores spent much of his working life--from 1966 until his retirement in 2001--in the automotive department at Sears in Corpus Christi. While there, Flores handled several brands of brake pads, including those manufactured by Borg-Warner. [2] Flores used Borg-Warner pads from 1972-75, on five to seven of the roughly twenty brake jobs he performed each week. [3] Borg-Warner disk brake pads contained chrysotile [4] asbestos fibers, fibers that comprised seven to twenty-eight percent of the pad's weight, depending on the particular type of pad. Flores's job involved grinding the pads so that they would not squeal. The grinding generated clouds of dust that Flores inhaled while working in a room that measured roughly eight by ten feet.

2 Flores also performed brake jobs using Bendix, Raybestos, Motorcraft, Chrysler, and GM products.

3 From 1966 through 1972, Flores performed approximately three brake jobs per day. None [**3] of those involved Borg-Warner products.

4 Chrysotile asbestos is the most abundant type of asbestos fiber and is a serpentine fiber consisting of "pliable curly fibrils which resemble scrolled tubes." Lee S. Siegel, Note, *As the Asbestos Crumbles: A Look at New Evidentiary Issues in Asbestos Related Property Damage Litigation, 20 HOFSTRA L. REV. 1139, 1149 (1992)*

Flores sued Borg-Warner and others, alleging that he suffered from asbestosis caused by working with brakes for more than three decades. At the week-long trial, Flores presented the testimony of two experts, Dr. Dinah Bukowski, a board-certified pulmonologist, and Dr. Barry Castleman, Ph.D., an "independent consultant in . . . the field of toxic substance control." Dr. Bukowski examined Flores on a single occasion in May 2001. She reviewed Flores's x-rays, which revealed interstitial lung disease. Although there are more than 100 causes (including smoking) of such disease, Dr. Bukowski diagnosed Flores with asbestosis, based on his work as a brake mechanic coupled with an adequate latency period. According to Dr. Bukowski, asbestosis is "a form of interstitial lung disease, one of the scarring processes of the lungs caused from [**4] the inhalation of asbestos and found on biopsy to show areas of scarring in association with actual asbestos bodies or asbestos fibers." [5] Dr. Bukowski noted that asbestosis can be fatal and is progressive, meaning that the scar tissue increases over time. Once inhaled, the fibers cannot be expelled, and there is no known cure for asbestosis. She asserted that Flores's asbestosis could worsen; that he could suffer [*767] stiffening of his lungs, loss of lung volume, and difficulty with oxygenation. She acknowledged that everyone is exposed to asbestos in the ambient air; "it's very plentiful in the environment, if you're a typical urban dweller." She conceded that Flores's pulmonary function tests showed mild obstructive lung disease, which was unrelated to asbestos exposure.

5 There was no biopsy performed on Flores's lung tissue, and Dr. Bukowski testified that, per criteria promulgated by the American Thoracic Society, biopsies are not necessary to an asbestosis diagnosis.

Barry Castleman, Ph.D. testified that he has written numerous articles in peer-reviewed journals, as well as a book entitled *Asbestos: Medical and Legal Aspects*. Chapter 8, titled "Asbestos Disease in Brake Repair Workers," [**5] discusses asbestos-related risks to brake mechanics, "a long term interest of [his]" and reviews the published and some unpublished literature on asbestos as a hazard to brake mechanics. Dr. Castleman did not conduct independent research regarding the brake industry; instead, his research involved "look[ing] at what was publicly available." Dr. Castleman testified that "brake mechanics can be exposed [to asbestos] by grinding of brake pads or -- or brake shoes and by -- in

the case of brake lining blowing out the accumulated dust in the brake -- in the brake housing in doing a brake servicing/brake repair job." He described a conference on the hazards of brake repair held by Ford of Britain in 1969 and published in 1970 in the Annals of Occupational Hygiene. That conference evaluated the levels of exposure to asbestos fiber in the air from brake servicing jobs, and "it showed that the levels of exposure could be . . . significant. They might not have necessarily exceeded the allowable exposure limits of the day, but in some cases, at least, they came close to doing that." Dr. Castleman then described some of the literature pertaining to mechanics in particular: a 1965 article that [**6] reported a case of mesothelioma in a "garage hand and chauffeur"; information published by the National Institute for Occupational Safety and Health warning about dangers to brake mechanics, emphasizing that grinding of brake parts was a hazardous job with high levels of asbestos exposure; and a 1978 brochure published by the Friction Material Standards Institute (FMSI), "a vehicle for companies in that subgroup of the asbestos industry to avail themselves of knowledge relating to the hazards and government regulation of their products in the years following 1968," warning brake mechanics about the dangers of asbestos. The FSMI brochure led Dr. Castleman to conclude "that the hazards to brake mechanics were effectively accepted by the asbestos manufacturers -- asbestos product manufacturers by that time."

Dr. Castleman testified that a 1968 article determined that "most of the asbestos in brake linings is destroyed by the heat of friction and therefore is not released to the public air as asbestos fiber." But "some of the asbestos was found to survive the heated friction of the braking process." When questioned about whether friable [6] asbestos remained, Dr. Castleman testified that "[r]espirable [**7] asbestos fibers still remain," and a brake mechanic could be exposed to those fibers "[e]ither by grinding brake parts or by blowing out brake housings doing brake servicing work." On cross-examination, Dr. Castleman conceded that he had not researched Borg-Warner products and did not have any specific knowledge about them. While he knew that Borg-Warner manufactured brake pads, he did not "have any more detailed knowledge about the company than that."

> 6 "Friable" refers to breathable asbestos. *See* James L. Stengel, *The Asbestos End-Game, 62 N.Y.U. ANN. SURV. AM. L. 223, 228 (2006).*

[*768] Flores admitted to smoking from the time he was twenty-five until three weeks prior to trial. Flores's cardiologist reported a 50-pack year [7] smoking history, greater than the 15 to 20-pack year history Flores reported to Dr. Bukowski. At the time of trial, Flores's chief medical complaint was shortness of breath, which he testified manifested itself primarily after he had been mowing the lawn for 35-40 minutes. Flores also suffers from coronary artery disease and high cholesterol.

> 7 A pack year is a way of measuring the amount a person has smoked over a long period of time. *See* NATIONAL CANCER INSTITUTE, DICTIONARY [**8] OF CANCER TERMS, http://www.cancer.gov/Templates/db_alpha . aspx?CdrID=306510 (all Internet materials last visited June 6, 2007 and copy available in clerk of court's file). It is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. *Id.*

Borg-Warner's expert, pulmonologist Dr. Kathryn Hale, examined Flores and testified that, in her opinion, he did not have asbestosis and that his x-rays did not show "any asbestos disease." She also testified that she had reviewed the literature, including epidemiological studies involving brake mechanics, and had not seen any articles indicating that auto mechanics suffered an increased risk of lung cancer or mesothelioma. She acknowledged that Flores's medical records included an x-ray report from a NIOSH certified B-reader [8] physician who opined that Flores had "bilateral interstitial fibrotic changes consistent with asbestosis in a patient who has had an adequate exposure history and latency period," but Hale testified that she relied on criteria promulgated by the American Thoracic Society, and under those criteria, Flores did not have asbestosis.

> 8 A "NIOSH certified B-reader" refers [**9] to a person who has successfully completed the x-ray interpretation course sponsored by the National Institute for Occupational Safety and Health (NIOSH) and passed the B-reader certification examination for x-ray interpretation. *See TEX. CIV. PRAC. & REM. CODE § 90.001(4)* (defining the term).

The jury found that (1) Flores sustained an asbestos-related injury or disease; (2) Borg-Warner's negligence (as well as that of three other settling defendants) proximately caused Flores's asbestos-related

injury or disease; (3) all four defendants were "engaged in the business of selling brake products"; and (4) the brake products had marketing, manufacturing, and design defects, each of which was a producing cause of Flores's injury. The jury apportioned to Borg-Warner 37% of the causation and 21% to each of the other three defendants. The jury awarded Flores $ 34,000 for future physical impairment, $ 34,000 for future medical care, $ 12,000 for past physical pain and mental anguish, and $ 34,000 for future physical pain and mental anguish. [9] In the second phase of the bifurcated trial, the jury found, by clear and convincing evidence, that Flores's injury resulted from malice and awarded $ [**10] 55,000 in exemplary damages against Borg-Warner. The trial court signed a judgment in conformity with the verdict, and Borg-Warner appealed.

9 Before the trial began, Flores withdrew his claims for past and future earnings, as well as loss of earning capacity.

The court of appeals affirmed, holding that there was legally sufficient evidence of negligence, citing the following:

> (1) Flores was a mechanic from 1964 to 2001; (2) as a mechanic, Flores ground new brake pads prior to installation, a process necessary to minimize "brake squealing"; (3) the grinding process produced visible dust, which Flores inhaled; [*769] (4) from 1972 to 1975, Flores ground brake pads manufactured by Borg-Warner; (5) Borg-Warner's brake pads contained between seven and twenty-eight percent asbestos by weight; (6) in 1998, Flores was diagnosed with asbestosis; (7) Dr. Castleman testified that brake mechanics can be exposed to asbestos by grinding brake pads, a process which produces "respirable asbestos fibers"; (8) Dr. Bukowski testified that "brake dust has been shown to . . . have asbestos fibers"; and (9) Dr. Bukowski also testified that "brake dust can cause asbestosis."

153 S.W.3d 209, 213-214. Borg-Warner petitioned [**11] for review arguing, among other things, that a plaintiff claiming to be injured by an asbestos-containing product must meet the same causation standards that other plaintiffs do. [10] We granted the petition. *49 Tex. Sup. Ct. J. 509 (Apr. 21, 2006).*

10 Centerpoint Energy, Inc., The Coalition for Litigation Justice, Inc., The Dow Chemical Company, Eastman Chemical Company, Exxon Mobil Corporation, The Goodyear Tire and Rubber Company, Owens Illinois, Inc., and Union Carbide Corporation submitted amicus briefs.

II

Discussion

11

11 We note initially that Borg-Warner did not challenge, either before trial or at the time the evidence was offered, the reliability of Flores's experts and has, therefore, waived any reliability challenge that would require us to evaluate the experts' underlying methodology, technique, or foundational data. *Coastal Transp. Co. v. Crown Cent. Petroleum Corp., 136 S.W.3d 227, 231-33 (Tex. 2004).* Thus, we consider only those objections "restricted to the face of the record." *Id. at 233.*

A

Causation

Perhaps the most widely cited standard for proving causation in asbestos cases is the *Lohrmann* "frequency, regularity, and proximity" test. *Lohrmann v. Pittsburgh Corning Corp., 782 F.2d 1156 (4th Cir. 1986);* [**12] *see also Slaughter v. S. Talc Co., 949 F.2d 167, 171 (5th Cir. 1991)* (noting that *Lohrmann* is "[t]he most frequently used test for causation in asbestos cases" and applying *Lohrmann* to an asbestos claim governed by Texas law). In *Lohrmann*, the Fourth Circuit Court of Appeals considered whether a trial court correctly directed a verdict in favor of four asbestos manufacturers, after determining that there was insufficient evidence of causation between use of their products and the plaintiffs' asbestosis. *Id. at 1162-63.* The appellate court noted that, under Maryland law, proximate cause required evidence that "allow[ed] the jury to reasonably conclude that it is more likely than not that the conduct of the defendant was a substantial factor in bringing about the result." *Id.*

at 1162 (noting that *section 431 of the Restatement (Second) of Torts* uses the same "substantial factor" test). The court rejected a standard "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 has been established as to whether that product" proximately caused the plaintiff's disease, as such [**13] a rule would be "contrary to the Maryland law of substantial causation." *Id. at 1163*. Instead, the court concluded that "[t]o support a reasonable inference of substantial causation from circumstantial evidence, there must be evidence of exposure to a specific producton a regular basis over some extended period of time in proximity to where the plaintiff actually worked." *Id. at 1162-63*. The court noted that "[i]n effect, this is a *de minimis* rule since a plaintiff must prove more than a [*770] casual or minimum contact with the product. This is a reasonable rule when one considers the Maryland law of substantial causation and the unusual nature of the asbestosis disease process, which can take years of exposure to produce the disease." *Id. at 1162*.

We have not adopted the *Lohrmann* test, and several amici urge us to do so here. The parties contend that our precedent adequately addresses the issue, as it requires that a party's conduct or product be a substantial factor in causing harm. We agree, with *Lohrmann*, that a "frequency, regularity, and proximity" test is appropriate, but those terms do not, in themselves, capture the emphasis our jurisprudence has placed on causation as an essential [**14] predicate to liability. It is important to emphasize that the *Lohrmann* court did not restrict its analysis to the tripartite phrase; indeed, it agreed that *Restatement section 431* requires that the exposure be a "substantial factor" in causing the disease. *Id.* That analysis comports with our cases. For example, *Restatement section 431*'s "substantial factor" test has informed our causation analysis on several occasions. *See Lear Siegler, Inc. v. Perez, 819 S.W.2d 470, 471 (Tex. 1991); see also Union Pump Co. v. Allbritton, 898 S.W.2d 773, 775-777 (Tex. 1995)*. We have recognized that "[c]ommon to both proximate and producing cause is causation in fact, including the requirement that the defendant's conduct or product be a substantial factor in bringing about the plaintiff's injuries." *Union Pump, 898 S.W.2d at 775*. "The word 'substantial' is used to denote the fact that the defendant's conduct has such an effect in producing the harm as to lead reasonable men to regard it as a cause, using that word in the popular sense, in which there always lurks the idea of responsibility, rather than in the so-called 'philosophic sense,' which includes every one of the great number of events without [**15] which any happening would not have occurred." *Lear Siegler, 819 S.W.2d at 472* (quoting *RESTATEMENT (SECOND) OF TORTS § 431 cmt. a* (1965)). In asbestos cases, then, we must determine whether the asbestos in the defendant's product was a substantial factor in bringing about the plaintiff's injuries.

One of toxicology's central tenets is that "the dose makes the poison." BERNARD D. GOLDSTEIN & MARY SUE HENIFIN, *Reference Guide on Toxicology, in* FEDERAL JUDICIAL CENTER, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 401, 403 (2d ed. 2000) (hereafter "REFERENCE MANUAL"). This notion was first attributed to sixteenth century philosopher-physician Paracelsus, who stated that "[a]ll substances are poisonous--there is none which is not; the dose differentiates a poison from a remedy." David L. Eaton, *Scientific Judgment and Toxic Torts--A Primer in Toxicology for Judges and Lawyers, 12 J.L. & POL'Y 5 (2003)* (citing CURTIS D. KLAASSEN, CASARETT AND DOULL'S TOXICOLOGY: THE BASIC SCIENCE OF POISONS Chs. 1, 4 (McGraw Hill 6th ed. 2001) (1975)). Even water, in sufficient doses, can be toxic. REFERENCE MANUAL at 403; *see also* Marc Fisher, *Radio Stations and the Promotional Games: A Fatal Attraction*, WASH. [**16] POST, Feb. 25, 2007, at N02, *available at* http://www.washingtonpost.com/wp-dyn/content/article/2007/02/23/AR 2007022300456.html (describing woman's death from water intoxication after participating in radio contest to win a video-game system).

Dose "refers to the amount of chemical that enters the body," and, according to one commentator, is "the single most important factor to consider in evaluating whether an alleged exposure caused a specific adverse effect." Eaton, *Scientific Judgment and Toxic Torts, 12 J.L. & POL'Y at 11*. We have recognized that "[e]xposure to asbestos, a known carcinogen, [*771] is never healthy but fortunately does not always result in disease." *Temple-Inland Forest Prods. Corp. v. Carter, 993 S.W.2d 88, 95 (Tex. 1999)*. We have held that epidemiological studies are without evidentiary significance if the injured person cannot show that "the exposure or dose levels were comparable to or greater than those in the studies." *Merrell Dow Pharms., Inc. v. Havner, 953 S.W.2d 706,*

720-21 (Tex. 1997). The federal Reference Manual on Scientific Evidence provides:

> An opinion on causation should be premised on three preliminary assessments. First, the expert should analyze whether [**17] the disease can be related to chemical exposure by a biologically plausible theory. Second, the expert should examine if the plaintiff was exposed to the chemical in a manner that can lead to absorption into the body. Third, the expert should offer an opinion as to whether the dose to which the plaintiff was exposed is sufficient to cause the disease.

REFERENCE MANUAL at 419.

Dr. Castleman testified that, despite the heat generated by braking, "some asbestos," in the form of respirable fibers, remained in the brake pads, and that brake mechanics could be exposed to those fibers when grinding the pads or blowing out the housings. Flores testified that grinding the pads generated dust, which he inhaled. Dr. Bukowski testified that every asbestos exposure contributes to asbestosis. There is no question, on this record, that mechanics in the braking industry could be exposed to respirable asbestos fibers. But without more, this testimony is insufficient to establish that the Borg-Warner brake pads were a substantial factor in causing Flores's disease. Asbestosis appears to be dose-related, "so that the more one is exposed, the more likely the disease is to occur, and the higher the exposure [**18] the more severe the disease is likely to be." *See* 3 DAVID L. FAIGMAN ET AL., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY § 28:22, at 447 (2007); *cf. id.* § 28:5, at 416 (noting that "it is generally accepted that one may develop mesothelioma from low levels of asbestos exposure"). While "[s]evere cases [of asbestosis] are usually the result of long-term, high-level exposure to asbestos,. . . '[e]vidence of asbestosis has been found many years after relatively brief but extremely heavy exposure.'" STEPHEN J. CARROLL ET AL., RAND INSTITUTE FOR CIVIL JUSTICE, ASBESTOS LITIGATION 13 (2005) (citing American Thoracic Society, *The Diagnosis of Nonmalignant Diseases Related to Asbestos: 1996 Update: Official Statement of the American Thoracic Society*, 134 AM. REV. RESPIRATORY DISEASE 363, 363-68 (1996)). One text notes that:

> There is general agreement from epidemiologic studies that the development of asbestosis requires heavy exposure to asbestos . . . in the range of 25 to 100 fibers per cubic centimeter-year. Accordingly, asbestosis is usually observed in individuals who have had many years of high-level exposure, typically asbestos miners and millers, asbestos textile [**19] workers, and asbestos insulators.

Andrew Churg, *Nonneoplastic Disease Caused by Asbestos*, *in* PATHOLOGY OF OCCUPATIONAL LUNG DISEASE 277, 313 (Andrew Churg & Francis H.Y. Green eds., Williams & Wilkins 1998) (1988).

This record, however, reveals nothing about how much asbestos Flores might have inhaled. He performed about fifteen to twenty brake jobs a week for over thirty years, and was therefore exposed to "some asbestos" on a fairly regular basis for an extended period of time. Nevertheless, absent any evidence of dose, the jury could not evaluate the quantity of respirable asbestos to which Flores might have been [*772] exposed or whether those amounts were sufficient to cause asbestosis. Nor did Flores introduce evidence regarding what percentage of that indeterminate amount may have originated in Borg-Warner products. We do not know the asbestos content of other brands of brake pads or how much of Flores's exposure came from grinding new pads as opposed to blowing out old ones. [12] There were no epidemiological studies [13] showing that brake mechanics face at least a doubled risk of asbestosis. *See Merrell Dow Pharms., Inc. v. Havner, 953 S.W.2d 706, 715 (Tex. 1997)*. While such studies are [**20] not necessary to prove causation, we have recognized that "properly designed and executed epidemiological studies may be part of the evidence supporting causation in a toxic tort case," and "the requirement of more than a doubling of the risk strikes a balance between the needs of our legal system and the limits of science." *Id. at 717-18*. Thus, while some respirable fibers may be released upon grinding some brake pads, the sparse record here contains no evidence of the approximate quantum of Borg-Warner fibers to which Flores was exposed, and whether this sufficiently contributed to the aggregate dose of asbestos

Flores inhaled, such that it could be considered a substantial factor in causing his asbestosis. *Union Pump, 898 S.W.2d at 775*; *see also Rutherford v. Owens-Illinois, Inc., 16 Cal. 4th 953, 67 Cal. Rptr. 2d 16, 941 P.2d 1203, 1219 (Cal. 1997)*.

> 12 We note that any asbestos fibers Flores encountered when blowing out brake housings would not necessarily have been from Borg-Warner brake pads but from whatever brand of pads Flores was replacing.
>
> 13 Epidemiological studies examine existing populations to attempt to determine if there is an association between a disease or condition and a factor suspected of causing that [**21] disease or condition. *Havner, 953 S.W.2d at 715*.

Thus, a literal application of *Lohrmann* leaves questions unanswered in cases like this. The evidence showed that Flores worked in a small room, grinding brake pads composed partially of embedded asbestos fibers, five to seven times per week over a four year period--seemingly satisfying *Lohrmann*'s frequency-regularity-proximity test. Implicit in that test, however, must be a requirement that asbestos fibers were released in an amount sufficient to cause Flores's asbestosis, or the *de minimis* standard *Lohrmann* purported to establish would be eliminated, and the *Union Pump* causation standard would not be met. In a case like this, proof of mere frequency, regularity, and proximity is necessary but not sufficient, as it provides none of the quantitative information necessary to support causation under Texas law.

We recognize the proof difficulties accompanying asbestos claims. The long latency period for asbestos-related diseases, coupled with the inability to trace precisely which fibers caused disease and from whose product they emanated, make this process inexact. *Rutherford, 941 P.2d at 1218* (acknowledging that lengthy latency periods "mean [**22] that memories are often dim and records missing or incomplete regarding the use and distribution of specific products" and "[i]n some industries, many different asbestos-containing products have been used, often including several similar products at the same time periods and worksites"). The Supreme Court of California has grappled with the appropriate causation standard in a case involving alleged asbestos-related cancer and acknowledged the difficulties in proof accompanying such claims:

> Plaintiffs cannot be expected to prove the scientifically unknown details of carcinogenesis, or trace the unknowable path of a given asbestos fiber. . . . [W]e [*773] can bridge this gap in the humanly knowable by holding that plaintiffs may prove causation in asbestos-related cancer cases by demonstrating that the plaintiff's exposure to defendant's asbestos-containing product in reasonable medical probability was a substantial factor in contributing to the aggregate *dose* of asbestos the plaintiff or decedent inhaled or ingested, and hence to the *risk* of developing asbestos-related cancer, without the need to demonstrate that fibers from the defendant's particular product were the ones, or among the ones, [**23] that *actually* produced the malignant growth.

Rutherford, 941 P.2d at 1219.

Thus, substantial-factor causation, which separates the speculative from the probable, need not be reduced to mathematical precision. Defendant-specific evidence relating to the approximate dose to which the plaintiff was exposed, coupled with evidence that the dose was a substantial factor in causing the asbestos-related disease, will suffice. As one commentator notes, "[i]t is not adequate to simply establish that 'some' exposure occurred. Because most chemically induced adverse health effects clearly demonstrate 'thresholds,' there must be reasonable evidence that the exposure was of sufficient magnitude to exceed the threshold before a likelihood of 'causation' can be inferred." Eaton, *12 J.L. & POL'Y at 39*. Dr. Bukowski acknowledged that asbestos is "plentiful" in the ambient air and that "everyone" is exposed to it. If a single fiber could cause asbestosis, however, "everyone" would be susceptible. No one suggests this is the case. Given asbestos's prevalence, therefore, some exposure "threshold" must be demonstrated before a claimant can prove his asbestosis was caused by a particular product.

In analyzing [**24] the legal sufficiency of Flores's negligence claim, then, the court of appeals erred in holding that "[i]n the context of asbestos-related claims, if there is sufficient evidence that the defendant supplied

any of the asbestos to which the plaintiff was exposed, then the plaintiff has met the burden of proof." *153 S.W.3d at 213* (emphasis added). This analysis is much like that rejected by the *Lohrmann* court as "contrary to the Maryland law of substantial causation": "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 has been established as to whether that product" proximately caused the plaintiff's disease. *Lohrmann, 782 F.2d at 1162*. Instead, as outlined above, a plaintiff must prove that the defendant's product was a substantial factor in causing the alleged harm. *Union Pump, 898 S.W.2d at 775*.

We note too, that proof of causation may differ depending on the product at issue; "[i]n some products, the asbestos is embedded and fibers are not likely to become loose or airborne, [while] [i]n other products, the asbestos is friable." *In re Ethyl Corp., 975 S.W.2d 606, 617 (Tex. 1998)*; [**25] *see also Gideon v. Johns-Manville Sales Corp., 761 F.2d 1129, 1145 (5th Cir. 1985)* (noting that "all asbestos products cannot be lumped together in determining their dangerousness"); *Hardy v. Johns-Manville Sales Corp., 681 F.2d 334, 347 (5th Cir. 1982)* (distinguishing between "airborne asbestos dust and fibers from thermal insulation" and other "products containing asbestos--in whatever quantity or however encapsulated");*In re R.O.C. Pretrial, 131 S.W.3d 129, 136-37 (Tex. App.--San Antonio 2004, no pet.)* (noting that "the type of asbestos that causes asbestosis is 'friable' asbestos," and that the claimants "had the initial burden to show [*774] that they were exposed to asbestos . . . in a form that is capable of causing injury from appellee's products"). We have recognized that "[t]his, of course, bears on the extent and intensity of exposure to asbestos," *Ethyl Corp., 975 S.W.2d at 617*, two factors central to causation. We have described situations in which workers were "so covered with asbestos as to be dubbed' the snowmen of Grand Central.'" *Temple-Inland, 993 S.W.2d at 95*. That is not the situation here, where the asbestos at issue was embedded in the brake pads. Dr. Castleman testified [**26] that brake mechanics could be exposed to "some" respirable fibers when grinding pads or blowing out housings, and Flores testified that the grinding generated dust. [14] Without more, we do not know the contents of that dust, including the approximate quantum of fibers to which Flores was exposed, and in keeping with the *de minimis* rule espoused in *Lohrmann* and required by our precedent, we conclude the evidence of causation in this case was legally insufficient. *Lohrmann, 782 F.2d at 1162*; *Union Pump, 898 S.W.2d at 775*.

14 The only other evidence possibly relating to causation was chapter 8 of Dr. Castleman's book, which the trial court admitted over Borg-Warner's hearsay objection. The chapter discusses a number of studies involving friction products and includes an annotated bibliography with short summaries of publications discussing potential asbestos hazards from friction product manufacture, fabrication, and replacement. Even considering chapter 8 in its entirety, the information it contains does not supply the missing link in the evidence here. The chapter consists of a five-page history of asbestos in friction products, as well as research and the government regulation thereof, [**27] followed by the annotated bibliography and several case reports of mesothelioma in brake repair workers. But nowhere does it quantify the respirable asbestos a brake mechanic like Flores might have inhaled or whether those amounts were sufficient to cause asbestosis. The chapter is silent on Borg-Warner products (although it does contain references to Bendix and General Motors), and it does not cite epidemiological studies showing a doubling of the asbestosis risk for brake mechanics. Thus, for the reasons outlined above, the information contained in chapter 8 does not provide evidence of causation, and we do not reach Borg-Warner's complaint that the trial court erred in admitting the evidence.

III

Conclusion

Flores alleged two claims: negligence and strict liability. Because each requires proof of substantial-factor causation, both fail. *See Union Pump, 898 S.W.2d at 775*. We reverse the court of appeals' judgment and render judgment for Borg-Warner. *TEX. R. APP. P. 60.2(c)*.

Wallace B. Jefferson

Chief Justice

OPINION DELIVERED: June 8, 2007

TAB E

By: Duncan S.B. No. 1123

A BILL TO BE ENTITLED

AN ACT

relating to the standard of causation in claims involving mesothelioma caused by exposure to asbestos fibers.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Chapter 90, Civil Practice and Remedies Code, is amended by adding Section 90.013 to read as follows:

Sec. 90.013. STANDARD OF CAUSATION FOR CLAIMS INVOLVING MALIGNANT MESOTHELIOMA. (a) To recover damages for malignant mesothelioma allegedly caused by exposure to asbestos or asbestos containing products, the claimant must prove, among other elements of the claim, that a defendant's product or conduct was a substantial factor in causing the claimant's injury.

(b) A defendant's product or conduct was a substantial factor in causing the exposed claimant's injury if the claimant presents qualitative proof that the asbestos exposure attributed to the defendant was substantial, and not merely de minimis, when considering:

(1) the frequency of the exposure;

(2) the regularity of the exposure; and

(3) the proximity of the claimant to the source of the asbestos fibers.

(c) A defendant who seeks a determination of the percentage of responsibility of another person under Section 33.003(a) must present qualitative proof in the same manner as is required of a

claimant under Subsection (b).

(d) A claimant or a defendant, including a defendant seeking a determination under Section 33.003(a), shall not be required to prove, or be prohibited from proving through otherwise admissible evidence, the numerical dose, approximate or otherwise, of asbestos fibers to which the claimant was exposed that are attributable to the defendant or another person under Section 33.003(a).

(e) Nothing in this section modifies the general legal requirements for the admissibility of expert testimony with respect to the issue of causation.

SECTION 2. Section 90.013, Civil Practice and Remedies Code, as added by this Act, applies to an action commenced on or after the effective date of this Act or pending on the effective date of this Act and in which the trial, or any new trial or retrial following motion, appeal, or otherwise, has not commenced on or before the effective date of this Act. An action commenced before the effective date of this Act in which trial has commenced on or before the effective date of this Act or in which there has been a final, unappealable disposition by order, judgment, voluntary dismissal, or otherwise is governed by the law applicable to the action immediately before the effective date of this Act, and that law is continued in effect for that purpose.

SECTION 3. If any provision of this Act or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of this Act that can be given effect without the invalid provision or application, and to this end the provisions of this Act are declared to be severable.

SECTION 4. This Act takes effect immediately if it receives a vote of two-thirds of all the members elected to each house, as provided by Section 39, Article III, Texas Constitution. If this Act does not receive the vote necessary for immediate effect, this Act takes effect September 1, 2009.

TAB F

WITNESS LIST

SB 1123

Senate Committee Report

State Affairs

March 23, 2009 - 10:00 AM

FOR:

Blevins, Jr., Bryan (TTLA & Mesothelioma Victims), Beaumont, TX

Jacobelli Silbert, Mary (Self), Spring, TX

Levy, Rick (TX AFL-CIO), Austin, TX

AGAINST:

Andrews, Kay (TCJL/TLR), Austin, TX

Faulk, Richard (TLR, TCJL), Houston, TX

Parsley, Lee (Texans for Lawsuit Reform), Austin, TX

Ratliff, Shannon (Texas Civil Justice League), Austin, TX

Spencer, John (TLR/TCJL), Columbia, MD

Weir, Francis W. Ph.D. (TLR/TCJL), Houston, TX

ON:

Davidson, Mark (Self), Houston, TX

Dodson, Ronald F. Ph.D. (also providing written testimony) (Self), Tyler, TX

Friedman, Gary K. M.D. (also providing written testimony) (Self), Houston, TX

Hays, Steve M. (also providing written testimony) (Self), Nashville, TN

Underwood, James M. (Self), Lorena, TX

Registering, but not testifying:

For:

Arabie, Joe (Texas AFL-CIO), Austin, TX

Cunningham, Michael (Texas Building and Construction Trades Council, AFL-CIO), Austin, TX

English, Connie (United Transportation Union), Austin, TX

Higgins, Mike (Texas State Association of Fire Fighters), Austin, TX

Quizni, Patty (Texas American Federation of Teachers), Austin, TX

Villarreal, Johnny (Houston Fire Fighters Local 341), Houston, TX

Against:

Alexander, Lee Ann (Liberty Mutual Group), Austin, TX

Allday, Marty (Enbridge Energy), Houston, TX

Anderson, Lisa (Shell), Austin, TX

Atwell, Stuart (Ethyl Corporation and The Okonite Company), Dallas, TX

Bellsnyder, Luke (Tx Assc. of Manufacturers), Austin, TX

Bosse, Fred (American Insurance Association), Austin, TX

Brown, Melissa (Georgia-Pacific), Washington, DC

Brown, Sabrina (Dow Chemical), Austin, TX

DeWitt, Cathy (Texas Association of Business), Austin, TX

Ege, Christopher (TLR), Houston, TX

Fatheree, Jason (Beazer East Inc. Thiem Corporation, Scapa Dryer Felts, Inc., United Conveyor Corporation, and Corpus Christi Gasket and Fastener, Ltd.), Dallas, TX

Fish, Paige (Conoco Phillips), Austin, TX

Fisher, Jon (Associated Builders and Contractors of Texas), Austin, TX

Fretz, Bob (Fretz Construction Co.), Houston, TX

Gray, John (TCLJ/TLR), Houston, TX

Horne, Nathan (Self), Austin, TX

Kearns, Dennis (BNSF Railway), Austin, TX

Kerlin, Paul (The Goodyear Tire and Rubber Co.), Houston, TX

Klumpyan, Julie (Valero Energy Corporation), San Antonio, TX

Kneeland, Angela (Total Petrochemical), Beaumont, TX

Kyle, Glenuce (Exxon Mobil), The Woodlands, TX

Mayberry, Warren (Dupont), Austin, TX

McCauley, Cindy (Lyondell Basell Industries), Houston, TX

Moore, Julie (Occidental Petroleum), Austin, TX

Omey, Samantha (Honeywell), Austin, TX

Oswald, Bill (Koch Companies), Austin, TX

Perry, Steve (Chevron USA), Austin, TX

Phifer, Elizabeth (Phifer and Colvin, LLP), Dallas, TX

Pickle, G. Edward (Shell Oil Co.), Humble, TX

Rivero, Hector (Texas Chemical Council), Austin, TX

Roach, Crystal (Ericsson, Inc. and Elliott Company), Dallas, TX

Sander, Lindsay (Kinder Morgan), Houston, TX
Shulling, Mark (Automotive Parts and Services Association), Austin, TX
Sutterfield, Lauren (Texas Oil and Gas Association), Austin, TX
Van Arsdale, Corbin (AGC - Texas Building Branch), Austin, TX
Ware, James (Self), Houston, TX
Woods, Joe (Property Casualty Insurers Assn of America), Austin, TX

TAB G

BILL ANALYSIS

Senate Research Center

C.S.S.B. 1123
By: Duncan
State Affairs
4/3/2009
Committee Report (Substituted)

AUTHOR'S / SPONSOR'S STATEMENT OF INTENT

This bill establishes a standard requiring that a claimant prove that a defendant's product or conduct was a substantial factor in causing an injury and that the exposed person's cumulative exposure to asbestos fibers was the cause of person's mesothelioma.

C.S.S.B. 1123 establishes the standard of causation for claims involving malignant mesothelioma.

RULEMAKING AUTHORITY

This bill does not expressly grant any additional rulemaking authority to a state officer, institution, or agency.

SECTION BY SECTION ANALYSIS

SECTION 1. Amends Chapter 90, Civil Practice and Remedies Code, by adding Section 90.013, as follows:

> Sec. 90.013. STANDARD OF CAUSATION FOR CLAIMS INVOLVING MALIGNANT MESOTHELIOMA. (a) Requires a claimant, to recover damages for malignant mesothelioma allegedly caused by exposure to asbestos or asbestos containing products, to prove, among other elements of the claim, that a defendant's product or conduct was a substantial factor in causing the claimant's injury.
>
> (b) Provides that a defendant's product or conduct was a substantial factor in causing the exposed claimant's injury if the claimant presents qualitative proof that the asbestos exposure attributed to the defendant was substantial, and not merely de minimis, when considering the frequency of exposure, the regularity of exposure, and the proximity of the exposed person to the source of the asbestos fibers.
>
> (c) Requires a defendant who seeks a determination of the percentage of responsibility of another person under Section 33.003(a) (relating to determination of percentage of responsibility of certain persons), to present qualitative proof in the same manner as is required of a claimant under Subsection (b).
>
> (d) Provides that neither a claimant nor a defendant seeking a determination under Section 33.003(a) are required to prove numerically the dose, approximate or otherwise, of asbestos fibers to which the claimant was exposed that are attributable to the defendant or another person under Section 33.003(a).
>
> (e) Provides that nothing in this section modifies the general legal requirements for the admissibility of expert testimony with respect to the issue of causation.

SECTION 2. Provides that Section 90.013, Civil Practice and Remedies Code, as added by this Act, applies to an action commenced on or after the effective date of this Act or pending on the effective date of this Act and in which the trial, or any new trial or retrial following motion, appeal, or otherwise, has not commenced on or before the effective date of this Act.

SECTION 3. Provides that if any provision of this Act or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of this Act that can be given effect without the invalid provision or application, and to this end the provisions of this Act are declared to be severable.

SECTION 4. Effective date: upon passage or September 1, 2009.

TAB H

SENATE JOURNAL

EIGHTY-FIRST LEGISLATURE — REGULAR SESSION

AUSTIN, TEXAS

PROCEEDINGS

FORTIETH DAY

(Monday, April 20, 2009)

The Senate met at 11:09 a.m. pursuant to adjournment and was called to order by President Pro Tempore Duncan.

The roll was called and the following Senators were present: Averitt, Carona, Davis, Deuell, Duncan, Ellis, Eltife, Estes, Fraser, Gallegos, Hegar, Hinojosa, Huffman, Jackson, Lucio, Nelson, Nichols, Ogden, Patrick, Seliger, Shapiro, Shapleigh, Uresti, Van de Putte, Watson, Wentworth, West, Whitmire, Williams, Zaffirini.

Absent-excused: Harris.

The President Pro Tempore announced that a quorum of the Senate was present.

Rabbi Brian Strauss, Congregation Beth Yeshurun, Houston, offered the invocation as follows:

> Almighty God and universal father over all of mankind, we are grateful to You for the ability to gather today with our fellow elected officials who strive for the betterment of our state and the lives of all those who call Texas home. We beseech You, eternal God, to guide us in our sacred task of protecting and preserving the fundamental human liberties of all our citizens. Help us, O God, in this quest by allowing us to seek the wisdom and counsel of those who came before us. Our Lord, our God, we also recall a verse from the book of Leviticus that reminds us that our country was founded on biblical precepts: Proclaim liberty throughout the land, for all of its inhabitants. Almighty God, source of all knowledge and wisdom, let us also remember the words of Your prophet Micah who stated: It has been told to you, O mortal, what is good and what the Lord requires of you: only to act justly, to love mercy, and to walk humbly with your God. O holy one, blessed be He, hearing these and other inspiring, time-tested words gives us the confidence and motivation we need to make sure that through our work, this great state will continue to be an influence for good throughout the world, uniting all people in peace and freedom, helping them to fulfill the vision of Your prophet Amos: Let justice roll on like a mighty river, righteousness like a never-ending stream. And to this, let us all say, Amen.

requirement of the Texas Constitution, third reading and a vote on **CSSB 54** would have occurred on the next legislative day, allowing for Texans to have learned through news reports of our second reading vote exactly what we had tentatively passed. Third reading and a vote on the next legislative day would also have allowed our professional staff an opportunity overnight to make sure any amendments passed on second reading are technically correct.

/s/Jeff Wentworth
Senator, District 25

The bill was read third time and was passed by the following vote: Yeas 30, Nays 0.

Absent-excused: Harris.

COMMITTEE SUBSTITUTE SENATE BILL 1123 ON THIRD READING

Senator Duncan moved to suspend the regular order of business to take up for consideration **CSSB 1123** at this time on its third reading and final passage:

CSSB 1123, Relating to the standard of causation in claims involving mesothelioma caused by exposure to asbestos fibers.

The motion prevailed by the following vote: Yeas 20, Nays 10.

Yeas: Averitt, Carona, Davis, Duncan, Ellis, Eltife, Gallegos, Hegar, Hinojosa, Lucio, Ogden, Seliger, Shapleigh, Uresti, Van de Putte, Watson, Wentworth, West, Whitmire, Zaffirini.

Nays: Deuell, Estes, Fraser, Huffman, Jackson, Nelson, Nichols, Patrick, Shapiro, Williams.

Absent-excused: Harris.

The bill was read third time.

Senator Duncan offered the following amendment to the bill:

Floor Amendment No. 1 on Third Reading

Amend **CSSB 1123** on third reading (Senate committee printing) as follows:

(1) In SECTION 1 of the bill, in added Section 90.013(d), Civil Practice and Remedies Code (page 1, line 34), strike "Neither a" and substitute "A".

(2) In SECTION 1 of the bill, in added Section 90.013(d), Civil Practice and Remedies Code (page 1, line 35), strike "nor" and substitute "or a defendant, including".

(3) In SECTION 1 of the bill, in added Section 90.013(d), Civil Practice and Remedies Code (page 1, line 35), strike "33.003(a) shall be" and substitute "33.003(a), shall not be".

(4) In SECTION 1 of the bill, in added Section 90.013(d), Civil Practice and Remedies Code (page 1, line 36), strike "numerically the" and substitute the following:

", or be prohibited from proving through otherwise admissible evidence, the numerical".

The amendment to **CSSB 1123** was read and was adopted by the following vote: Yeas 20, Nays 10.

Yeas: Averitt, Carona, Davis, Duncan, Ellis, Eltife, Gallegos, Hegar, Hinojosa, Lucio, Ogden, Seliger, Shapleigh, Uresti, Van de Putte, Watson, Wentworth, West, Whitmire, Zaffirini.

Nays: Deuell, Estes, Fraser, Huffman, Jackson, Nelson, Nichols, Patrick, Shapiro, Williams.

Absent-excused: Harris.

On motion of Senator Duncan and by unanimous consent, the caption was again amended to conform to the body of the bill as amended.

CSSB 1123 as again amended was finally passed by the following vote: Yeas 19, Nays 11.

Yeas: Averitt, Carona, Davis, Duncan, Ellis, Eltife, Gallegos, Hinojosa, Lucio, Ogden, Seliger, Shapleigh, Uresti, Van de Putte, Watson, Wentworth, West, Whitmire, Zaffirini.

Nays: Deuell, Estes, Fraser, Hegar, Huffman, Jackson, Nelson, Nichols, Patrick, Shapiro, Williams.

Absent-excused: Harris.

(President Pro Tempore Duncan in Chair)

COMMITTEE SUBSTITUTE SENATE BILL 1431 ON SECOND READING

On motion of Senator Hinojosa and by unanimous consent, the regular order of business was suspended to take up for consideration **CSSB 1431** at this time on its second reading:

CSSB 1431, Relating to the licensing and regulation of towing companies and vehicle storage facilities; providing penalties.

The bill was read second time.

Senator Hinojosa offered the following amendment to the bill:

Floor Amendment No. 1

Amend **CSSB 1431** (Senate committee printing) as follows:

(1) In SECTION 1 of the bill, in amended Section 2308.002(5-a), Occupations Code (page 1, lines 25 and 26), strike "by a peace officer under Section 545.305 or 545.3051, Transportation Code".

(2) In SECTION 1 of the bill, in amended Section 2308.002(8-a), Occupations Code (page 1, line 51) strike "owner" and substitute "owner without the consent of the owner or operator of the vehicle".

(3) In SECTION 2 of the bill, in added Section 2308.0575(b)(1), Occupations Code (page 2, line 10), strike "private property" and substitute "nonconsent".

(4) In SECTION 2 of the bill, in added Section 2308.0575, Occupations Code (page 2, between lines 26 and 27), insert the following:

TAB I

MINUTES

SENATE COMMITTEE ON STATE AFFAIRS

Monday, March 23, 2009
10:00 a.m.
Senate Chamber

*****

Pursuant to a notice posted in accordance with Senate Rule 11.18, a public hearing of the Senate Committee on State Affairs was held on Monday, March 23, 2009, in the Senate Chamber.

*****

MEMBERS PRESENT:
Senator Robert Duncan
Senator Bob Deuell
Senator John Carona
Senator Rodney Ellis
Senator Troy Fraser
Senator Chris Harris
Senator Mike Jackson
Senator Eddie Lucio, Jr.
Senator Leticia Van de Putte

MEMBERS ABSENT:
None

*****

The chair called the meeting to order at 10:05 a.m. The following business was transacted:

The chair laid out SB 78 and recognized the author, Senator Nelson, to explain the bill. Senator Van de Putte sent up a committee substitute; the chair recognized Senator Nelson to explain the difference between the committee substitute and the senate bill as filed. Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 78 be left pending; without objection, it was so ordered.

The chair laid out SB 79 and recognized the author, Senator Nelson, to explain the bill. Senator Ellis sent up a committee substitute; the chair recognized Senator Nelson to explain the difference between the committee substitute and the senate bill as filed. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered.

The clerk called the roll. The following members arrived after the roll was called:
Senator John Carona
Senator Troy Fraser
Senator Chris Harris
Senator Mike Jackson

There being a quorum present, Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Duncan moved that CSSB 79 be left pending; without objection, it was so ordered.

The chair laid out SB 888 and recognized the author, Senator Nelson, to explain the bill. Senator Lucio, Jr. sent up a committee substitute; the chair recognized Senator Nelson to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 888 be left pending; without objection, it was so ordered.

The chair laid out SB 779 and recognized the author, Senator Watson, to explain the bill. Senator Deuell sent up a committee substitute; the chair recognized Senator Watson to explain the difference between the committee substitute and the senate bill as filed. Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 779 be left pending; without objection, it was so ordered.

The chair laid out SB 957 and recognized the author, Senator Watson, to explain the bill. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 957 be left pending; without objection, it was so ordered.

The chair laid out SB 1081 and recognized the author, Senator Huffman, to explain the bill.
Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1081 be left pending; without objection, it was so ordered.

The chair laid out SB 1142 and recognized the author, Senator Carona, to explain the bill.
Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1142 be left pending; without objection, it was so ordered.

The chair laid out SB 1143 and recognized the author, Senator Carona, to explain the bill. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1143 be left pending; without objection, it was so ordered.

The chair laid out SB 964 and recognized the author, Senator Ellis, to explain the bill. Senator Carona sent up a committee substitute; the chair recognized Senator Ellis to explain the difference between the committee substitute and the senate bill as filed. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 964 be left pending; without objection, it was so ordered.

At 10:50 a.m. Senator Duncan moved that the committee stand at ease until after adjournment of the Senate; without objection, it was so ordered.

At 6:00 p.m. the committee reconvened, and the clerk called the roll. There being a quorum present, the following business was transacted:

The chair laid out as a matter of pending business SB 76. Senator Van de Putte sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Van de Putte moved that SB 76 do not pass but that CSSB 964 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Van de Putte moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 80. Senator Harris moved that SB 80 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Van de Putte moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 92. Senator Van de Putte moved that the committee reconsider the vote by which the earlier substitute was adopted; without objection, it was so ordered. Senator Van de Putte withdrew the previous committee substitute to SB 92.
Senator Van de Putte sent up a new committee substitute; the chair recognized Senator Van de Putte to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Van de Putte moved that SB 92 do not pass but that CSSB 92 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Lucio, Jr. moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 182. Senator Lucio sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Lucio moved that SB 182 do not pass but that CSSB 182 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 7 ayes, 2 nays, 0 present not voting, and 0 absent.

The chair laid out as a matter of pending business SB 482. Senator Ellis moved that SB 482 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Ellis moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 698. Senator Ellis moved that SB 698 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Ellis moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 747. Senator Carona sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Carona sent up Committee Amendment 1 and moved adoption; without objection, the amendment was adopted. Senator Carona requested unanimous consent to roll the amendments into a committee substitute; without objection, it was so ordered. Senator Carona then moved that the committee substitute be adopted; without objection, it was so ordered. Senator Carona moved that SB 747 do not pass but that 7CSSB 747 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent.

The chair laid out as a matter of pending business SB 762. Senator Lucio sent up a committee substitute. Senator Lucio moved adoption of the committee substitute; without objection, it was so ordered. Senator Lucio moved that SB 762 do not pass but that CSSB 762 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Lucio, Jr. moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 828. Senator Lucio moved that SB 828 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Lucio moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 879. Senator Carona moved that SB 879 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent.

The chair laid out as a matter of pending business SB 927. Senator Jackson moved that SB 927 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Jackson moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 972. Senator Lucio, Jr. sent up Committee Amendment 1 and moved adoption; without objection it was so ordered. Senator Lucio, Jr. requested unanimous consent to roll the amendment into a committee substitute; without objection, it was so ordered. Senator Lucio, Jr. then moved that the new committee substitute be adopted; without objection, it was so ordered. Senator Lucio, Jr. moved that SB 972 do not pass but that CSSB 92 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nay, 0 present not voting, and 0 absent. Senator Jackson moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

Senator Deuell assumed the chair.

The chair laid out as a matter of pending business SB 1111. Senator Duncan sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Duncan moved that SB 1111 do not pass but that CSSB 1111 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Duncan moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 1134. Senator Duncan sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Duncan moved that SB 1134 do not pass but that CSSB 1134 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Duncan moved that the bill be recommended for placement of the Local & Uncontested Calendar; without objection, it was so ordered.

Senator Duncan resumed the chair.

The chair laid out as a matter of pending business SB 1119. Senator Ellis moved that SB 1119 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 5 ayes, 4 nays, 0 present not voting, and 0 absent.

The chair laid out as a matter of pending business SB 78. Senator Van de Putte sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Van de Putte moved that SB 78 do not pass but that CSSB 78 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Van de Putte moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 79. Senator Ellis sent up a committee substitute. Senator Lucio, Jr. moved adoption of the committee substitute; without objection, it was so ordered. Senator Lucio, Jr. moved that SB 79 do not pass but that CSSB 79 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Van de Putte moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 779. Senator Deuell sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Lucio, Jr. moved that SB 779 do not pass but that CSSB 779 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Deuell moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair lay out as a matter of pending business SB 888. Senator Lucio, Jr. moved that SB 888 do not pass but that CSSB 888 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Lucio, Jr. moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 957. Senator Deuell moved that SB 957 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Harris moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 964. Senator Carona sent up a committee substitute. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Ellis moved that SB 964 do not pass but that CSSB 964 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Ellis moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 1081. Senator Deuell moved that SB 1081 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nay, 0 present not voting, and 0 absent. Senator Deuell moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 1142. Senator Carona moved that SB 1142 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Carona moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 1143. Senator Carona moved that SB 1143 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 9 ayes, 0 nays, 0 present not voting, and 0 absent. Senator Carona moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

Senator Deuell moved to reconsider the vote by which SB 879 was voted and passed out; without objection, it was so ordered. Senator Duncan moved that SB 879 be left pending; without
objection, it was so ordered.

Senator Deuell assumed the chair.

The chair laid out SB 1123 and recognized the author, Senator Duncan, to explain the bill.
Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 1123 be left pending; without objection, it was so ordered.

Senator Duncan resumed the chair.

There being no further business, at 9:20 p.m. Senator Duncan moved that the Committee stand recessed subject to the call of the chair. Without objection, it was so ordered.

Senator Robert Duncan, Chair

Erin Fry, Clerk

TAB J

MINUTES

SENATE COMMITTEE ON STATE AFFAIRS

Thursday, April 2, 2009
8:30 a.m.
Senate Chamber

*****

Pursuant to a notice posted in accordance with Senate Rule 11.18, a public hearing of the Senate Committee on State Affairs was held on Thursday, April 2, 2009, in the Senate Chamber.

*****

MEMBERS PRESENT:
Senator Robert Duncan
Senator Bob Deuell
Senator John Carona
Senator Rodney Ellis
Senator Troy Fraser
Senator Chris Harris
Senator Eddie Lucio, Jr.
Senator Leticia Van de Putte

MEMBERS ABSENT:
Senator Mike Jackson

*****

The chair called the meeting to order at 8:55 a.m. The following business was transacted:

Senator Deuell assumed the chair.

The chair laid out SB 1500 and recognized the author, Senator Duncan, to explain the bill. Senator Duncan sent up a committee substitute; the chair recognized Senator Duncan to explain the difference between the committee substitute and the senate bill as filed. Witnesses testifying and registering on the bill are shown on the attached list.

There being a quorum present, the chair moved adoption of the committee substitute to SB 1500, without objection, it was so ordered. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 1500 be left pending; without objection, it was so ordered.

Senator Duncan resumed the chair.

The chair moved that the committee stand in recess until 30 minutes upon adjournment of the Senate; without objection, it was so ordered.

At 1:45 p.m. the committee reconvened.

Senator Lucio, Jr. assumed the chair.

The chair laid out as a matter of pending business SB 6 and recognized the author, Senator Duncan, to explain the bill. Senator Duncan sent up a committee substitute; the chair recognized Senator Duncan to explain the difference between the committee substitute and the senate bill as filed. Senator Lucio, Jr. moved adoption of the committee substitute; without objection, it was so ordered. Senator Duncan moved that SB 6 do not pass but that CSSB 6 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent.

The chair laid out as a matter of pending business SB 1771 and recognized the author, Senator Duncan, to explain the bill. Senator Duncan sent up a committee substitute; the chair recognized Senator Duncan to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Duncan moved that SB 1771 do not pass but that CSSB 1771 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent. Senator Harris asked unanimous consent to be shown voting aye on SB 6; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 842. Senator Lucio, Jr. sent up a committee substitute; the chair recognized Senator Averitt to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. The chair moved to reopen public testimony, without objection it was so ordered. Witnesses testifying are shown on the attached list. The chair moved to close public testimony; without objection, it was so ordered. Senator Lucio, Jr. moved that SB 842 do not pass but that CSSB 842 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 1 present not voting, and 0 absent. Senator Lucio, Jr. moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 879. Senator Van de Putte sent up a committee substitute; the chair recognized Senator Averitt to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Van de Putte moved that SB 879 do not pass but that CSSB 879 be reported back to the Senate

with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent.

The chair laid out as a matter of pending business SB 586 and recognized the author, Senator Carona, to explain the bill. Senator Carona sent up a committee substitute; the chair recognized Senator Deuell to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Carona moved that SB 586 do not pass but that CSSB 586 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent. Senator Carona moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out SB 1305 and recognized the author, Senator Patrick, to explain the bill. Senator Ellis sent up a committee substitute; the chair recognized Senator Patrick to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Senator Harris moved that SB 1305 do not pass but that CSSB 1305 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent. Senator Harris moved that the bill be recommended for placement on the Local & Uncontested Calendar; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 961 and recognized the author, Senator Ellis, to explain the bill. Senator Ellis previously sent up a committee substitute. Senator Ellis moved adoption of the committee substitute; without objection, it was so ordered. Senator Ellis moved that SB 961 do not pass but that CSSB 961 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent.

The chair laid out SB 1071 and recognized the author, Senator Wentworth, to explain the bill.
Senator Lucio, Jr. sent up a committee substitute; the chair recognized Senator Watson to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1071 be left pending; without objection, it was so ordered.

The chair laid out as a matter of pending business SB 1629 and recognized the author, Senator Wentworth, to explain the bill. Senator Carona sent up a committee substitute; the chair recognized Senator Wentworth to explain the difference between the committee substitute and the senate bill as filed.

Senator Lucio, Jr. assumed the chair.

Senator Lucio, Jr. moved adoption of the committee substitute for SB 1629; without objection it was so ordered. Witnesses testifying and registering on the bill are shown on the attached list.
The chair moved that the public testimony be closed; without objection, it was so ordered.
Senator Lucio, Jr. moved that SB 1629 be left pending; without objection, it was so ordered.

The chair laid out SB 1692 and recognized the author, Senator Wentworth, to explain the bill.

Senator Duncan resumed the chair.

Senator Carona sent up a committee substitute; the chair recognized Senator Wentworth to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee substitute; without objection, it was so ordered.
Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1692 be left pending; without objection, it was so ordered.

The chair laid out SB 390 and recognized the author, Senator Patrick, to explain the bill. Senator Lucio, Jr. sent up Committee Amendment 1 and moved adoption; without objection, the amendment was adopted. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Lucio, Jr. moved that SB 390 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent.
Senator Lucio, Jr. moved to reconsider the vote by which SB 390 was reported; without objection, it was so ordered. Senator Lucio, Jr. requested unanimous consent to incorporate amendments into the committee substitute; without objection, it was so ordered. Senator Lucio, Jr. then moved that the new committee substitute be adopted; without objection, it was so ordered. Senator Lucio, Jr. moved that SB 390 do not pass but that CSSB 390 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent.

Senator Lucio, Jr. assumed the chair.

The chair laid out as a matter of pending business SB 1123 and recognized the author, Senator Duncan, to explain the bill. Senator Duncan sent up a committee substitute; the chair recognized Senator Duncan to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the committee

substitute; without objection, it was so ordered. Senator Duncan moved that SB 1123 do not pass but that CSSB 1123 be reported back to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 6 ayes, 2 nays, 0 present not voting, and 1 absent.

Senator Duncan resumed the chair.

The chair laid out SB 281 and recognized the author, Senator Nelson, to explain the bill. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Fraser moved that SB 281 be reported favorably to the Senate with the recommendation that it do pass and be printed. The motion carried with a record vote of 8 ayes, 0 nay, 0 present not voting, and 1 absent.

The chair laid out SB 704 and recognized the author, Senator Nelson, to explain the bill. Senator Lucio, Jr. sent up a committee substitute; the chair recognized Senator Nelson to explain the difference between the committee substitute and the senate bill as filed. Senator Duncan moved adoption of the substitute; without objection, it was so ordered. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 704 be left pending; without objection, it was so ordered.

The chair laid out SB 74 and recognized the author, Senator Nelson, to explain the bill. Senator Fraser sent up a committee substitute; the chair recognized Senator Nelson to explain the difference between the committee substitute and the senate bill as filed.

Senator Lucio, Jr. assumed the chair.

Witnesses testifying and registering on the bill are shown on the attached list.

Senator Deuell assumed the chair.

The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 74 be left pending; without objection, it was so ordered.

The chair laid out SB 1291 and recognized the author, Senator Van de Putte, to explain the bill.
Senator Van de Putte sent up a committee substitute; the chair recognized Senator Van de Putte to explain the difference between the committee substitute and the senate bill as filed.

Senator Duncan assumed the chair.

Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1291 be left pending; without objection, it was so ordered.

The chair laid out SB 1814 and recognized the author, Senator Van de Putte, to explain the bill. Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1814 be left pending; without objection, it was so ordered.

The chair laid out SB 1815 and recognized the author, Senator Van de Putte, to explain the bill. Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1815 be left pending; without objection, it was so ordered.

The chair laid out SB 1211 and recognized the author, Senator Fraser, to explain the bill. Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Duncan moved that SB 1211 be left pending; without objection, it was so ordered.

Senator Deuell assumed the chair.

The chair laid out SB 551 and recognized the author, Senator Carona, to explain the bill. Senator Carona sent up a committee substitute; the chair recognized Senator Carona to explain the difference between the committee substitute and the senate bill as filed. Senator Carona sent up Committee Amendment 1 and explained the amendment. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 551 be left pending; without objection, it was so ordered.

The chair laid out SB 1810 and SJR 36 and recognized Senator Carona, in the absence of the author, to explain the bill. Senator Carona sent up a committee substitute to SB 1810; the chair recognized Senator Carona to explain the difference between the committee substitute and the senate bill as filed. Witnesses registering on SB 1810 and SJR 36 are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 1810 and SJR 36 be left pending; without objection, it was so ordered.

The chair laid out SB 1970 and recognized Senator Carona, in the absence of the author, to explain the bill. Senator Carona sent up a committee substitute; the chair recognized Senator Carona to explain the difference between the committee substitute and the senate bill as filed. Witnesses registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 1970 be left pending; without objection, it was so ordered.

The chair laid out SB 1912 and recognized Senator Carona, in the absence of the author, to explain the bill. Senator Carona sent up a committee substitute; the chair recognized

Senator Carona to explain the difference between the committee substitute and the senate bill as filed. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 1912 be left pending; without objection, it was so ordered.

The chair laid out SB 1152 and recognized the author, Senator Hinojosa, to explain the bill. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SB 1152 be left pending; without objection, it was so ordered.

The chair moved the committee stand at ease; without objection it was so ordered.

The committee reconvened.

The chair laid out SJR 42 and recognized the author, Senator Duncan, to explain the bill. Witnesses testifying and registering on the bill are shown on the attached list. The chair moved that the public testimony be closed; without objection, it was so ordered. Senator Deuell moved that SJR 42 be left pending; without objection, it was so ordered.

Senator Duncan resumed the chair.

There being no further business, Senator Duncan moved that the Committee stand recessed subject to the call of the chair. Without objection, it was so ordered.

_____

Senator Robert Duncan, Chair

_____

Erin Fry, Clerk

TAB K

By: Eiland H.B. No. 1811

A BILL TO BE ENTITLED

AN ACT

relating to the standard of causation in claims involving mesothelioma caused by exposure to asbestos fibers.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Chapter 90, Civil Practice and Remedies Code, is amended by adding Section 90.013 to read as follows:

Sec. 90.013. STANDARD OF CAUSATION FOR CLAIMS INVOLVING MALIGNANT MESOTHELIOMA. (a) This section provides the exclusive means of proving causation for claims in which the claimant seeks recovery for malignant mesothelioma allegedly caused by exposure to asbestos fibers.

(b) Notwithstanding any other law, to recover damages on a claim to which this section applies, the claimant must prove:

(1) that a defendant's product or conduct was a substantial factor in causing the injury to the exposed person, as described by Subsection (c);

(2) foreseeability, if the cause of action is one in which foreseeability is an element of causation; and

(3) that the exposed person's cumulative exposure to asbestos fibers was a cause of the person's mesothelioma.

(c) A defendant's product or conduct was a substantial factor in causing the exposed person's injury if the exposure to the asbestos fibers for which that defendant is alleged to be responsible contributed to the cumulative exposure of the exposed

person and was more than purely trivial when considering the following qualitative factors:

(1) the frequency of exposure;

(2) the regularity of exposure; and

(3) the proximity of the exposed person to the source of the asbestos fibers.

(d) In a claim to which this section applies, a defendant who seeks a determination of the percentage of responsibility of another person under Section 33.003(a) is required to prove causation in the same manner as is required of a claimant.

(e) Nothing in this section requires a claimant or a defendant who seeks a determination of the percentage of responsibility of another person under Section 33.003(a) to prove, for any purpose, a quantitative dose, approximate quantitative dose, or estimated quantitative dose of asbestos fibers to which the exposed person was exposed.

SECTION 2. The change in law made by this Act applies to all actions pending or commenced on or after the effective date of this Act.

SECTION 3. This Act takes effect immediately if it receives a vote of two-thirds of all the members elected to each house, as provided by Section 39, Article III, Texas Constitution. If this Act does not receive the vote necessary for immediate effect, this Act takes effect September 1, 2009.

TAB L

WITNE
SS LIST

Judiciary & Civil Jurisprudence Committee

March 30, 2009 - 2:00 PM or upon final adjourn./recess

HB 108

For: Bush, Wilma (Self and Co. & Dist. Clerk's Assoc.)

HB 123

Registering, but not testifying:

For: Anderson, Laura (San Antonio Police Department)
Daniels, Katrina (Bexar County District Attorney Susan D Reed)
Gaylor, Tom (Texas Municipal Police Association)
Marlin, Justin (Texans Care for Children)
Rose, Lauren (Texas Association Against Sexual Assault)
Sabo, Jason (Children at Risk)

On: Dyer, Jay (Office of the Attorney General)

HB 600

Registering, but not testifying:

For: Parsley, Lee (Texans for Lawsuit Reform)

HB 677

Registering, but not testifying:

For: Sandlin, Bennett (Texas Municipal League)

HB 849

For: Borel, Dennis (Coalition of Texans with Disabilities)
Boyte, Melanie (ADAPT of Texas)
Davenport, Mikail (Self)
Lyons, Crystal (Self and Coalition of Texans with Disabilities)
Rodgers, Gene (Self)
Stacey, Franklin (Adapt/PACT/Com. NOW)
Steele, Mary (ADAPT/PACT/Community Now)
Wilson, Darrell (Texas Chapter Paralyzed Veterans of America)

Registering, but not testifying:

For: Basler, Charlene (NNOC)
Bearden, Chase (Self)
Bolton, Pamela J. (Texas Watch)
Carrillo, Dolores (ADAPT PACT)
Choate, Dawn (The Arc of Texas)
Cranston, Catherine R (Self and Personal Attendant Coalition of Tx/Adapt of Tx)
English, Ellen (Knowbility, Inc.)
Hughes, Sofija (Pact/Adapt Personal Asst)
Kafka, Bob (ADAPT of Texas)
Langendorf, Jean (United Cerebral Palsy of Texas)
Levy, Rick (Tx AFL-CIO)
Lewis-Nourzad, Lisa (MS Society)
Lewis-Nourzad, Lisa (Texas PTA)
Lin, Lisa (Texas Association of Acupuncturist)
Lin, Lisa (Texas College of TCM)
Marlin, Justin (Texans Care for Children)
Mason, Katherine (ACLU of Texas)
McPhail, Jennifer (Self)
Mills, Sarah (Advocacy, Inc.)
Saenz, Danny (Self)

For: Stallings, Robin (Texas Bicycle Coalition, dba BikeTexas)
Steele, Burrell (ADAPT of Texas)
Stine, Mark (Self)
Thomas, Stephanie (Self and ADAPT of Tx)
Vanhoose, Laurie (AARP)
Wadge, Gyl (Mental Health America of Texas)
Warner, Carrie (Self)
Wittie, David (Self and ADAPT of Texas)

HB 998

For: Fogel, Guy (Self)
Henricks, Susan (Self)
Mackay, Taralynn (Self)

Porter, Jon (Self)
Weitz, Tim (Self)

On: Robinson, Mari (Texas Medical Board)

Registering, but not testifying:

For: Carlton, Christanne (Self)
Castro, Mayra (Self)
Claymon, Jennifer (Davis & Wilkerson, PC)
Dalrymple, Kenda (Self)
Finch, Dan (Texas Medical Assn)
Hardin, Paul (Texas Physical Therapy Association)
Laney, JPete (Self)
Leans, Jennifer (Self)
McDonald, Jeff (Self)
Pearson, David (Tx Organization of Rural & Community Hospitals)
Ray, Jason (Self)
Sternthal, Daniel (Self)
Zayas, Roberto (Self and Internet Medical Clinics)

Against: Barber, Kathy (Texas Federation of Drug Stores)
Beck, Richard (Tx Pharmacy Business Council)
Calvert, Jess (Texas Deutal Association)
Shields, Brad (Texas Society of Health System Pharmacists)

On: Johnston, James (Texas Board of Nursing)
Western, Deea (Texas Department of Insurance)

HB 1201

Registering, but not testifying:

For: Noble, Shannon (Texas Air Conditioning Contractors Association)

HB 1551

For: Arellano, Velma (Nueces County District Court Reporters)
Saldana, Marisela (Nueces County District Courts)

Registering, but not testifying:

For: Chavez, Sandra (Nueces County District Court Reporters)
Ybarra, Evelyn M. (Nueces County District Court Reporters)

HB 1811

For: Arabie, Joe (Texas AFL-CIO)
Bailess, Alnet S (Self)

For: Blevins, Bryan (Texas Trial Lawyers Ass.)
Brown, Scotty L (Self)
Feeney, Heather (Self)
Friedman, Gary (Self)
Hays, Steve (Self)

Against: Andrews, Kay (TCJL/TLR)
Behrens, Mark (Self)
Coleman, Peter (Texans for Lawsuit Reform)
Parsley, Lee (Texans for Lawsuit Reform)
Weir, Frank (Texas Civil Justice League Texans for Lawsuit Reform)

On: Davidson, Mark (Self)

Registering, but not testifying:

For: Cunningham, Michael (Texas State Building and Construction Trades Council, AFL-CIO)
Harris, Dwight (Tx - AFT)
Levy, Rick (Tx AFL - CIO)
Smith, Brady (Rosemary Smith)

Against: Acevedo, Adrian (Anadarko Petroleum Corp.)
Alexander, Lee Ann (Liberty Mutual Group)
Atwell, Stuart (Ethyl Corporation The Okonite Company)
Barber, Kathy (Texas Retailers Association)
Bellsnyder, Luke (Texas Association of Manufacturers)
Benko, Joanna (Zurich Financial Services)
Borskey, Chrissy (General Electric)
Brazaitis, Gregory (Energy Transfer Company)
Bridges, Russell (3M Company)

Brown, Melissa (Georgia Pacific)

Christian, George (Texas Civil Justice League)

Cobb, Ron (Travelers Inc.)

Cox, Jayme (Shell Oil)

Davis, Tricia (Self and American Royalty Council)

Fatheree, Jason (Beazer East, Inc.; Thiem Corporation; Scapa Dryer Fabrics, Inc.; United Conveyor Corporation; and Corpus Christi Gasket & Fastener, Ltd.)

Fisher, Jon (Associated Builders and Contractors of Texas)

Fore, Delbert (Enterprise Products)

Gutierrez, Hugo (Marathon Oil Corp.)

Hammond, Bill (Tx Association of Business)

Hazlewood, Steve (Dow Chemical Co.)

Kearns, Dennis (BNSF Railway Texas Railroad Association)

Kerlin, Paul (The Goodyear Tire & Rubber Company)

Klumpyan, Julie (Valero Energy Corporation)

Kugler, Laura (John Crane Inc.)

Lively, Lance (NFIB Texas)

Marlow, John (American Insurance Association)

Mayberry, Warren (Dupont)

McCauley, Cindy (Lyondell Basell Industries)

Against: Meroney, Mike (Huntsman Corporation)

Moore, Julie (Occidental Petroleum)

Omey, Samantha (Honeywell International, Inc.)

Oswald, Bill (Koch Companies)

Pate, Gardner (EOG Resources)

Perry, Steve (Chevron USA)

Phelps, William (Alon Energy)

Phelps, William (Total Petrochemicals)

Phifer, Elizabeth (Phifer & Colvin, LLP)

Rivero, Hector (Texas Chemical Council)

Roach, Crystal (Elliott Company and Ericsson, Inc.)

Sander, Lindsay (KinderMorgan)

Sebree, Ben (Texas Oil & Gas Association)

Sellers, Tom (Conoco Phillips)

Simpson, Reagan (Self)

Tays, Sara (Exxon Mobil Corporation)

Vane, Mark (Gardere Wynne Sewell)

Waddy, Victoria (Zackry Group, Inc. and its affiliated companies)

Warndof, Donna (TIPRO-Tx. Independent Producers and Royalty Owners Assn.)

Woods, Joe (Property Casualty Insurers Association of America (PCI))

Yass, Robert (The Hartford Finacial Services Group. Inc. and its subsidiaries)

On: McMath, Dale (Self)

HB 1940

For: Bower, Bruce (Texas Kincare Task Force)

Giovannini, John (Self and Texas Silver Haired Legislature (I am one of the authors of TSHL Resolution 49)

Higgins, Carlos (Self and Texas Silver-Haired Legislature)

Against: Robertson, Eric (Texas Family Law Foundation)

On: Wilmot, Felipa (Area Agency on Aging of the Coastal Bend)

Registering, but not testifying:

For: Besteiro, Ollie (AARP)

Borel, Dennis (Coalition of Texans with Disabilities)

Kappel, Katy (Texas Silver Haired Legislature)

Marlin, Justin (Texans Care for Children)

Mills, Sarah (Advocacy, Inc.)

Wadge, Gyl (Mental Health America of Texas)

Against: Ausley, Thomas (Texas Family Law Foundation)

Bresnen, Steve (Texas Family Law Foundation)

On: Kromrei, Liz (Department of Family & Protective Services - Child Protective Services)

Page, Johnnie (Department of Family & Protective Services)

HB 1956

For: Bolton, Pamela J. (Texas Watch)

Grigg, Dicky (Tex-ABOTA LEF)

Roach, Nelson (TTLA)

Against: Christian, George (Texas Civil Justice League)

Against: Hull, Mike (Texas Alliance for Patient Access)
Parsley, Lee (Texans for Lawsuit Reform)
Solomon, Paul (Self and State Farm Insurance Company)

Registering, but not testifying:

For: Binder, Bob (Self)
Bowers, Fred (Self and myself and clients and lien holders)
Gabbay, Leonard (Self)
Gibson, John (Self)
Hogan, Robert (Self)
Hokowitz, Daniel (Self)
Kidd, Donald (Self)
Lanehart, David (Self)
Major, Benjamin (Self)
Moody, David (Self)
Nech, Nichole (Self)
Schuelke, C Brooks (Self)
Tombs, Joseph (Self)
White, Robert (Self)
Whitehead, Marc (Self)
Zwernemann, Allen (Self)

Against: Alexander, Lee Ann (Liberty Mutual Group)
Bellsnyder, Luke (Texas Association of Manufacturers)
Bridges, Russell (3M Company)
Cox, Jayme (Shell Oil)
Davis, Tricia (Self and American Royalty Council)
Fisher, Jon (Associated Builders and Contrators of Texas)
Floyd, Beaman (Texas Coalition for Affordable Insurance Solutions)
Gilbert, Robert (Bo) (United Services Automobile Assoc. (USAA))
Hammond, Bill (Tx Assocation of Business)
Hazlewood, Steve (Dow Chemical Co.)

Kearns, Dennis (BNSF Railway Texas Railroad Association)
Lively, Lance (NFIB Texas)
Marlow, John (American Insurance Association)
Mayberry, Warren (Dupont)
McCauley, Cindy (Lyondell Basell Industries)
Meroney, Mike (Huntsman Corporation)
Moore, Julie (Occidental Petroleum)
Oswald, Bill (Koch Companies)
Perry, Steve (Chevron USA)
Rivero, Hector (Texas Chemical Council)
Sander, Lindsay (KinderMorgan)
Sebree, Ben (Texas Oil & Gas Association)
Sellers, Tom (Conoco Phillips)
Woods, Joe (Property Casualty Insurers Assn. of America (PCI))
Yass, Robert (The Hartford Financial Services Group . Ins and its subsidiaries)

HB 2368

For: Pargaman, William (Real Estate, Probate, & Trust Law Section of the State Bar of Texas)

Registering, but not testifying:

For: Brigance, John (Texas Bankers Association, Wealth Mgmt & Trust Division)
Torgeson, Janice (Self)

HB 2435

Registering, but not testifying:

For: Bresnen, Steve (Texas Family Law Foundation)

TAB M

The House Committee on Judiciary & Civil Jurisprudence
81st Legislature
March 30, 2009
2:00 p.m. or upon final adjourn./recess
E2.010

CORRECTED MINUTES

On April 22, 2009, the House Committee on Judiciary & Civil Jurisprudence authorized the correction of the minutes for the meeting of the House Committee on Judiciary & Civil Jurisprudence held on March 30, 2009. The following are the corrected minutes for that meeting:

Pursuant to a notice posted on March 25, 2009, having permission granted on March 30, 2009 to meet during House bill referral and suspension of the 5 day posting rule and all necessary rules on March 30, 2009 to allow the committee to consider HB 1682, the House Committee on Judiciary & Civil Jurisprudence met in a public hearing and was called to order by the chair, Representative Hunter, at 2:34 p.m.

The roll was answered as follows:

Present: Representatives Hunter; Hughes; Alonzo; Branch; Hartnett; Jackson, Jim; Leibowitz; Madden; Martinez, "Mando"; Woolley (10).

Absent: Representative Lewis (1).

A quorum was present.

(Representative Lewis now present.)

HB 72

Rep. Branch moved to reconsider the vote by which the measure was reported from committee. The motion to reconsider prevailed without objection.

Representative Leibowitz offered a complete committee substitute.

The committee substitute was adopted without objection.

Representative Hunter moved that HB 72, as substituted, be reported favorably to the full house with the recommendation that it do pass and be printed. The motion prevailed by the following record vote:

Ayes: Representatives Hunter; Hughes; Alonzo; Branch; Jackson, Jim; Leibowitz; Madden; Martinez, "Mando"; Woolley (9).

Nays: None (0).

Present, Not Voting: Representative Hartnett (1).

Absent: Representative Lewis (1).

HB 63

The chair laid out HB 63 as pending business.

Representative Woolley offered a complete committee substitute.

The committee substitute was adopted without objection.

Representative Leibowitz moved that HB 63, as substituted, be reported favorably to the full house with the recommendation that it do pass and be printed. The motion prevailed by the following record vote:

Ayes: Representatives Hunter; Hughes; Alonzo; Branch; Hartnett; Jackson, Jim; Leibowitz; Madden; Martinez, "Mando"; Woolley (10).

Nays: None (0).

Present, Not Voting: None (0).

Absent: Representative Lewis (1).

HB 764

The chair laid out HB 764 as pending business.

Representative Martinez, "Mando" offered a complete committee substitute.

The committee substitute was adopted without objection.

Representative Woolley moved that HB 764, as substituted, be reported favorably to the full house with the recommendation that it do pass and be printed. The motion prevailed by the following record vote:

Ayes: Representatives Hunter; Hughes; Alonzo; Branch; Hartnett; Jackson, Jim; Leibowitz; Madden; Martinez, "Mando"; Woolley (10).

Nays: None (0).

Present, Not Voting: None (0).

Absent: Representative Lewis (1).

HB 1809

The chair laid out HB 1809 as pending business.

Representative Alonzo moved that HB 1809, without amendments, be reported favorably to the full house with the recommendation that it do pass and be printed and be sent to the Committee on Local and Consent Calendars. The motion prevailed by the following record vote:

Ayes: Representatives Hunter; Hughes; Alonzo; Branch; Hartnett; Jackson, Jim; Leibowitz; Madden; Martinez, "Mando"; Woolley (10).

Nays: None (0).

Present, Not Voting: None (0).

Absent: Representative Lewis (1).

HB 639

The chair laid out HB 639 as pending business.

Representative Alonzo offered a complete committee substitute.

The committee substitute was adopted without objection.

Representative Alonzo moved that HB 639, as substituted, be reported favorably to the full house with the recommendation that it do pass and be printed and be sent to the Committee on Local and Consent Calendars. The motion prevailed by the following record vote:

Ayes: Representatives Hunter; Hughes; Alonzo; Branch; Hartnett; Jackson, Jim; Leibowitz; Madden; Martinez, "Mando"; Woolley (10).

Nays: None (0).

Present, Not Voting: None (0).

Absent: Representative Lewis (1).

(Representative Lewis now present.)

HB 1682

The chair laid out HB 1682.

The chair recognized Representative Cook to explain and close on the measure.

The bill was left pending without objection.

HB 1201

The chair laid out HB 1201.

Representative Hughes offered a complete committee substitute.

The chair recognized Representative Solomons to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair closed on the measure.

The committee substitute was withdrawn without objection.

The bill was left pending without objection.

HB 1551

The chair laid out HB 1551.

The chair recognized Representative Herrero to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Herrero to close on the measure.

The bill was left pending without objection.

HB 108

The chair laid out HB 108.

The chair recognized Representative Phillips to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Phillips to close on the measure.

The bill was left pending without objection.

HB 2435

The chair laid out HB 2435.

The chair recognized Representative Phillips to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Phillips to close on the measure.

The bill was left pending without objection.

HB 849

The chair laid out HB 849.

The chair recognized Representative Strama to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Strama to close on the measure.

The bill was left pending without objection.

HB 600

The chair laid out HB 600.

(Representative Martinez, "Mando" in chair.)

The chair recognized Representative Hughes to explain and close on the measure.

The bill was left pending without objection.

HB 2368

The chair laid out HB 2368.

The chair recognized Representative Hartnett to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Hartnett to close on the measure.

The bill was left pending without objection.

(Representative Hunter in chair.)

HB 1956

The chair laid out HB 1956.

The chair recognized Representative Smithee to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Smithee to close on the measure.

The bill was left pending without objection.

HB 998

The chair laid out HB 998.

Representative Madden offered a complete committee substitute.

(Representative Hughes in chair.)

The chair recognized Representative Brown, Fred to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Brown, Fred to close on the measure.

The committee substitute was withdrawn without objection.

The bill was left pending without objection.

HB 1811

The chair laid out HB 1811.

The chair recognized Representative Eiland to explain the measure.

Representative Martinez, "Mando" offered a complete committee substitute.

Testimony taken/registration recorded. (See attached witness list.)

(Representative Hughes in chair.)

(Representative Hunter in chair.)

The chair recognized Representative Eiland to close on the measure.

The committee substitute was withdrawn without objection.

The bill was left pending without objection.

HB 677

The chair laid out HB 677.

The chair recognized Representative Hartnett to explain the measure.

Representative Lewis offered a complete committee substitute.

The chair recognized Representative Hartnett to close on the measure.

The committee substitute was withdrawn without objection.

The bill was left pending without objection.

HB 123

The chair laid out HB 123.

The chair recognized Representative Jackson, Jim to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Jackson, Jim to close on the measure.

The bill was left pending without objection.

HB 1940

The chair laid out HB 1940.

The chair recognized Representative Herrero to explain the measure.

Testimony taken/registration recorded. (See attached witness list.)

The chair recognized Representative Herrero to close on the measure.

The bill was left pending without objection.

At 12:53 a.m., on the motion of the chair and without objection, the meeting was adjourned subject to the call of the chair.

_____

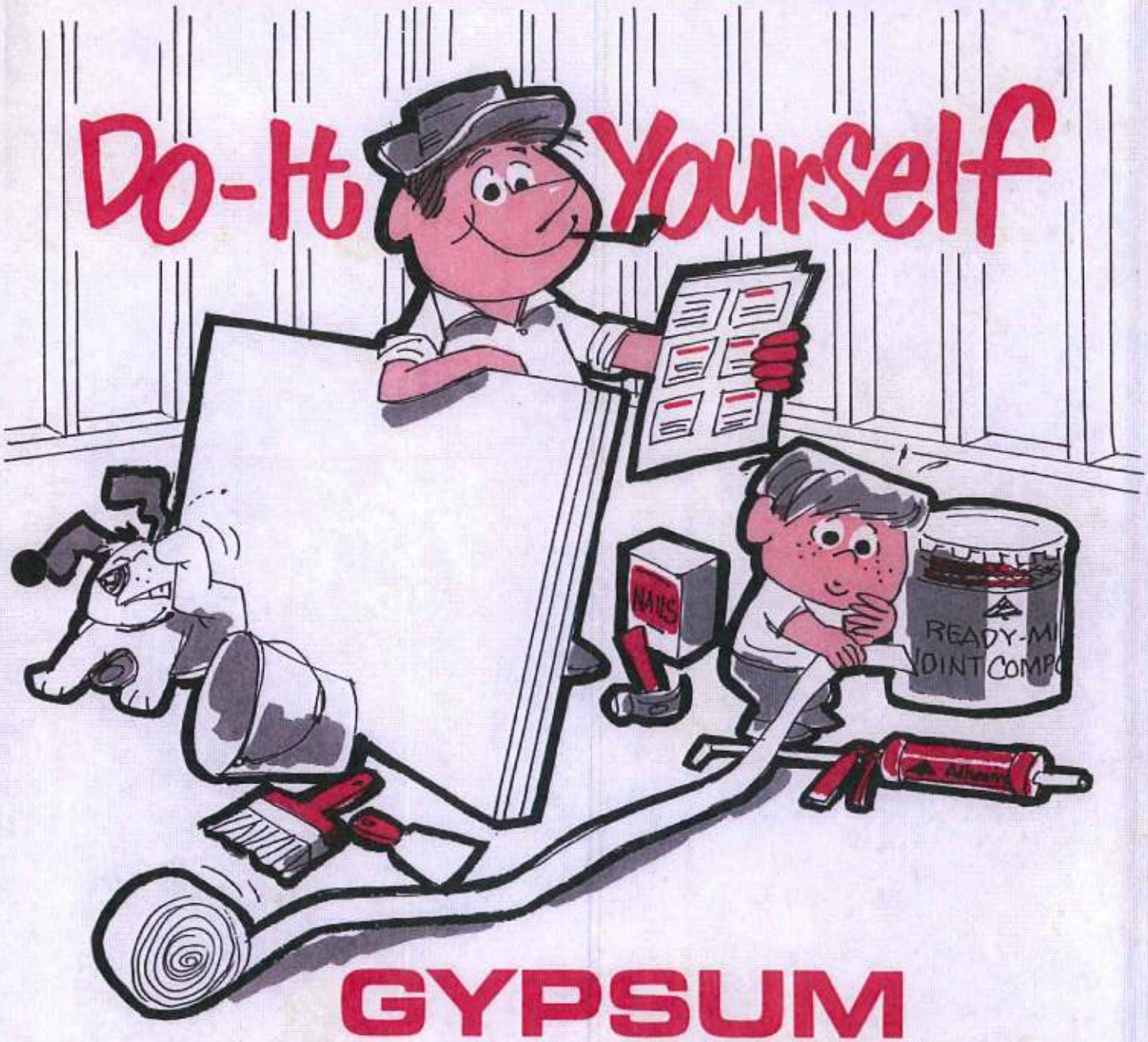
Rep. Hunter, Chair

_____

Jennifer Welch, Clerk

TAB N

NOTE: This instruction booklet is designed for the average homeowner who is involved in a home improvement project and needs simple, easy to follow instructions on how to apply and finish gypsum wallboard.



GYPSUM WALLBOARD APPLICATION

Georgia-Pacific

GYPSUM DIVISION

PLAINTIFF'S EXHIBIT

GP-2722

FOLLOW THESE EASY DO-IT-YOURSELF ST

1 PLANNING THE JOB

A little thought and planning before you start your project can result in a better appearing job and a savings in materials and time. Make a sketch of the areas to be surfaced with gypsum wallboard and lay out the board panels. Install the boards across (perpendicular to) the joists or studs. Use as long a board as can be handled to eliminate or reduce end joints. For example, in a 12' x 13' room where the ceiling joists run parallel to the 13' dimension, it is desirable to have the boards be 12' long. If they are 8' long, an end joint would be necessary in each course. Where end joints cannot be avoided, they should be staggered.

It is usually better to apply the board on the ceiling first, then the sidewalls.

It is often easier to use the adhesive/nail-on method of application. This method results in fewer nails to drive and conceal and makes a higher quality installation.

2 ESTIMATING MATERIALS

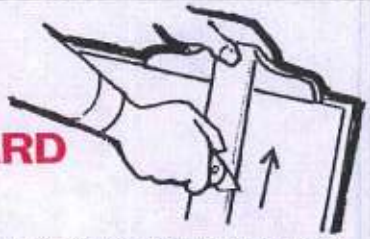
Using the sketch, determine the lengths and number of board required. Nails can be estimated from chart below. About 50% fewer nails are required if the adhesive/nail-on method is used

ESTIMATING NAILS

Wallboard Thickness	Nail Type	Approx. lbs. per 1000 sq. ft of gypsum wallboard
⅜", ½"	1¾" coated type drywall nail	5¼ lbs.
⅝"	1⅞" coated type drywall nail	5¼ lbs.

After the wallboard is installed, the flat joints and inside corners are to be reinforced with a paper tape and joint compound. The outside corners are to be reinforced with a drywall metal corner bead and joint compound. G. P. Ready Mix is a pre-mixed, ready-to-use product that can be used for the complete job of taping, filling, spotting, nail-heads and finishing.

4 CUTTING GYPSUM WALLBOARD



Use T-square and wallboard knife for scoring. With the knife at right angles to the board, score completely through the face paper. Then apply firm even pressure to snap the board. Fold back the partially separated portion of the board and use the knife again to cut the back paper. Rough edges should be smoothed. Panels can be cut with a saw if desired.

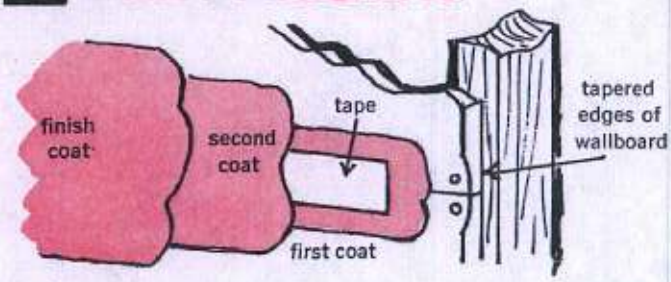
CUTTING OPENINGS

It will be necessary to cut holes in the wallboard for electrical outlets, light receptacles, etc. The distance of the opening from the end and edge of the board should be carefully measured and marked on the face of the wallboard. The opening should then be outlined in pencil and cut-out with a keyhole saw. The cut-out must be accurate or the cover plate will not conceal the hole.

5 CEILING INSTALLATION

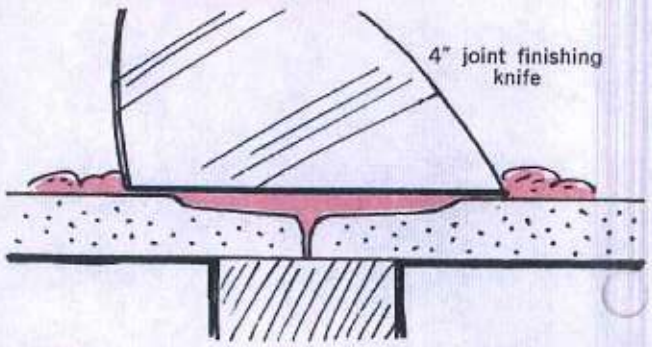
It is more difficult to install the ceiling boards because of the overhead positioning. It is desirable to have T-braces to hold the board in place while it is being nailed. A satisfactory T-brace consists of a 2 foot piece of 1 x 4 nailed onto the end of a 2 x 4. The length should be about an inch longer than the floor to ceiling height. The nails should be 7" apart. When the adhesive/nail-on method is used, the edges should be nailed, but only 1 nail per joist in the field of the board. All edges should be supported on framing. The nails should be driven to bring the board tight to the framing, then another blow struck to dimple the nail, being careful not to break the face paper.

8 JOINT FINISHING



A pre-mixed material such as G-P Ready Mix Joint Compound is the easiest to use to finish joints, corners and nailheads. A minimum of three coats of Ready-Mix is recommended for all taped joints. This includes an embedding coat to bond the tape and two finishing coats over the tape. Each coat should dry thoroughly, usually 24 hours, so that the surface can be easily sanded. When sanding, wrap your sandpaper around a wood sanding block so you sand the surface evenly. Do not over-sand or sand the paper surface. This may outline the joint or nail head through the paint.

9 APPLYING BEDDING COMPOUND



Take your 4" joint finishing knife and apply the Ready-Mix Joint Compound fully and evenly into the slight recess created by the adjoining tapered edges of the board.

PS FOR PROFESSIONAL-LOOKING RESULTS

The following chart will tell you approximately how much joint compound to buy.

***ESTIMATING READY MIX JOINT COMPOUND & TAPE**

G-P Gypsum Wallboard Square Feet	Estimated Amount of G-P Ready-Mix Joint Compound	Estimated Amount of G-P Wallboard Tape
100-200 sq. ft.	1 Gal.	2—60′ rolls
300-400 sq. ft	2 Gals.	3—60′ rolls
500-600 sq. ft.	3 Gals.	1—250′ roll
700-800 sq. ft.	4 Gals.	1—250′ roll 1—60′ roll
900-1000 sq. ft.	1-5 Gal. Pail	1—250′ roll 2—60′ rolls or 1—500′ roll

*A powder joint compound, G-P All Purpose, is also available. Estimate 60 lbs. per 1000 sq. ft. of wallboard.

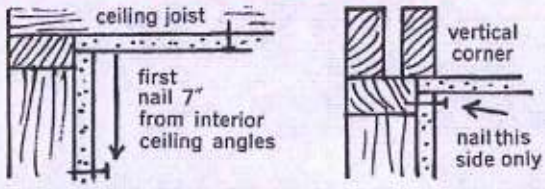
In the adhesive/nail-on method, G-P Drywall adhesive is applied to the joists and studs before each piece of wallboard is positioned and nailed. The adhesive is applied to the framing member from a caulking gun in about a ⅜″ diameter bead. For each 1,000 square feet of wallboard use eight quart size tubes of adhesive.

3 TOOLS REQUIRED

The basic tools you need are:

1. Wallboard Cutting Knife and Heavy Duty Knife Blade
2. Wallboard Hammer or Regular Crown Head Carpenters Claw Hammer.
3. 4′ T-Square or Steel Straight Edge
4. Steel Tape Measure
5. Utility Saw or Keyhole Saw
6. Joint Finishing Knives—4″ and 10″ Blades
7. Plastic Pan for Joint Compound
8. Sand Paper (medium texture) for Joint Finishing
9. Caulking Gun

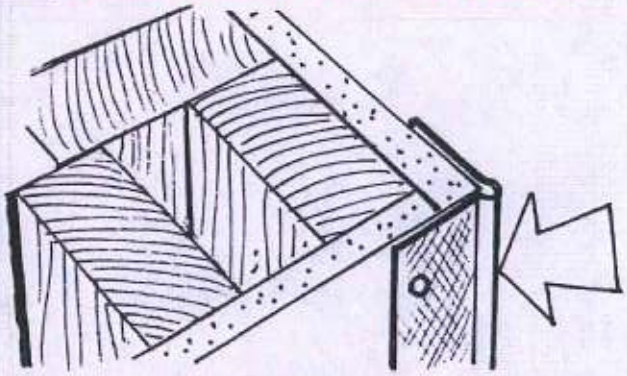
6 WALL APPLICATION



In horizontal application on sidewalls, install the top board first. Push the board up firmly against the ceiling and nail, placing nails 7″ apart. One exception, however, is to keep all nails back 7″ from interior ceiling angles. Nails in the interior angles are quite apt to pop. If the adhesive nail-on method is used, all of the field nailing can be eliminated. The nailing is around the edges of the board. If the board is bowed out in the center, it may be advisable to secure with a temporary nail until the adhesive sets.

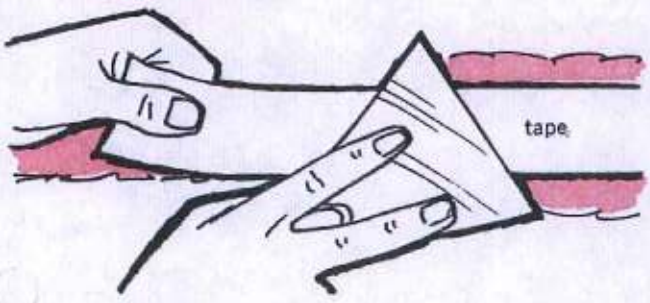
A vertical application places the long edges of the wallboard parallel to the framing members. This is more desirable if the ceiling height of your wall is greater than 8′-2″ or the wall is 4′ wide or less. Nailing recommendations are the same as for horizontal application.

7 METAL CORNERBEAD



To protect corners from edge damage, install metal cornerbead after you have installed the wallboard. Nail the metal cornerbead every 5″ through gypsumboard into wood framing.

10 APPLYING WALLBOARD TAPE



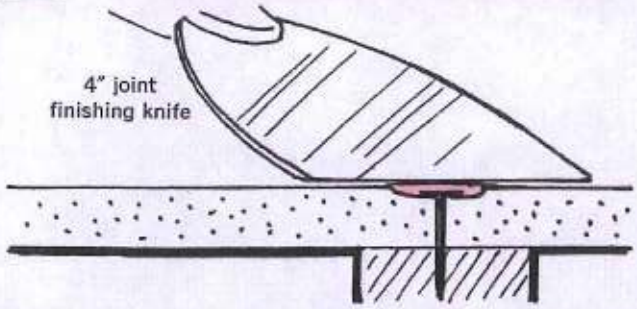
Next, take your wallboard tape, center it over the joint and press the tape firmly, into the bedding compound with your wallboard knife held at a 45° angle. The pressure should squeeze some compound from under the tape, but enough must be left for a good bond.

11 APPLYING FINISHING COATS

When thoroughly dry, at least 24 hours, apply a fill coat extending a few inches beyond the edge of the tape and feather the edges of the compound. When the first finishing coat is thoroughly dry, use your 10″ joint finishing knife and apply a second coat and feather the edges about 1½″ beyond the first coat. When this coat is dry, sand lightly to a smooth even surface. Wipe off the dust in preparation for the final decoration. Total width should be 12 to 14 inches.

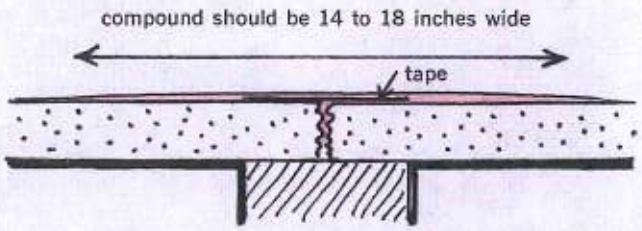
OVER→

12 FINISHING NAIL HEADS



Draw your 4"-joint finishing knife across nails to be sure they are below the surface of the board. Apply first coat of Ready-Mix with even pressure to smooth compound level with the surface of the board. Do not bow knife blade with excess pressure as this tends to scoop compound from dimpled area. When dry, apply second coat, let dry, sand lightly and apply third coat. Sand lightly before applying your decoration. An additional coat may be needed depending on temperature and humidity.

13 FINISHING END JOINTS

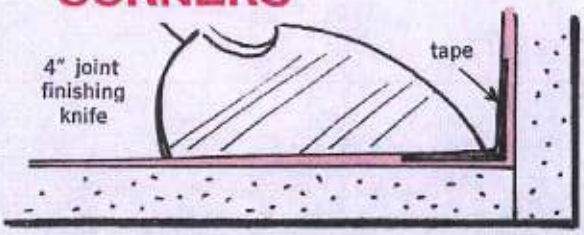


You use basically the same steps with end or butt joints as you do with tapered edges. The end joints are not tapered so care must be taken not to build up the compound in the center of the joint. This encourages ridging and shadowed areas. Feather the compound well out on each side of the joint. Final application of joint compound should be 14 to 18 inches wide.

14 FINISHING METAL CORNERBEAD

Be sure the metal corner is attached firmly. Take your 4" finishing knife and spread the G-P Ready-Mix 3" to 4" wide from the nose of the bead, covering the metal edges. When completely dry, sand lightly and apply second coat, feathering edges 2" to 3" beyond the first coat. A third coat may be needed depending on your coverage. Feather the edges of each coat 2" or 3" beyond the preceding coat.

15 FINISHING INSIDE CORNERS



Cut your tape the length of the corner angle you are going to finish. Apply the G-P Ready-Mix with your 4" knife evenly about 1½" on each side of the angle. Use sufficient compound to embed the tape. Fold the tape along the center crease and firmly press it into the corner. Use enough pressure to squeeze some compound under the edges. Feather the compound 2 inches from the edge of the tape. When first coat is dry, apply a second coat. Feather the edge of the compound 1½" beyond the first coat. Apply a third coat if necessary, let dry and sand to a smooth surface. Use as little compound as possible at the apex of the angle to prevent hairline cracking.

FINAL DECORATION

After the joint treatment is thoroughly dry, all surfaces should be sealed or primed with a vinyl or oil base primer/sealer. This equalizes the absorption difference between the exposed surface and the joint compound surface. You will then have a uniform texture and suction over the entire wall or ceiling. When the primer/sealer has dried, apply your final decoration per the manufacturers recommendations.

SPECIAL GYPSUM WALLBOARD PRODUCTS

There are several wallboards that are made for specific uses. Ask your building materials dealer about:

Eternawall™ — A predecorated vinyl faced wallboard in various designs for vertical installation on walls. Joints are left unfinished.

Tile Backer Board—A water resistant wallboard which serves as a backer for ceramic tile in bath or shower areas.

Firestop® — A fire resistant board which provides ratings which are required in many building codes and regulations.

Georgia-Pacific

GYPSUM DIVISION
900 S.W. FIFTH AVENUE
PORTLAND, OREGON 97204

GWA 9/72 15M

"SINCE 1911"
GRAY'S INDEPENDENT
WHOLESALE · RETAIL
TACOMA'S OLDEST LUMBER YARDS

TAB O

Reference Manual on Scientific Evidence

Second Edition

Federal Judicial Center

West Group

Reference Manual on Scientific Evidence

Second Edition

WEST GROUP
ST. PAUL, MN
2000

Reference Guide on Toxicology

BERNARD D. GOLDSTEIN AND MARY SUE HENIFIN

Bernard D. Goldstein, M.D., is Director, Environmental & Occupational Health Sciences Institute, Piscataway, New Jersey, and Chairman, Department of Environmental & Community Medicine, UMDNJ–Robert Wood Johnson Medical School, Piscataway, New Jersey.

Mary Sue Henifin, J.D., M.P.H., is a partner with Buchanan Ingersoll, P.C., Princeton, New Jersey, and Adjunct Professor of Public Health Law, Department of Environmental & Community Medicine, UMDNJ–Robert Wood Johnson Medical School, Piscataway, New Jersey.

CONTENTS

I. Introduction

Toxicology classically is known as the science of poisons. A modern definition is "the study of the adverse effects of chemicals on living organisms."[1] Although it is an age-old science, toxicology has only recently become a discipline distinct from pharmacology, biochemistry, cell biology, and related fields.

There are three central tenets of toxicology. First, "the dose makes the poison"; this implies that all chemical agents are intrinsically hazardous—whether they cause harm is only a question of dose.[2] Even water, if consumed in large quantities, can be toxic. Second, each chemical agent tends to produce a specific pattern of biological effects that can be used to establish disease causation.[3] Third, the toxic responses in laboratory animals are useful predictors of toxic responses in humans. Each of these tenets, and their exceptions, are discussed in greater detail in this reference guide.

The science of toxicology attempts to determine at what doses foreign agents produce their effects. The foreign agents of interest to toxicologists are all chemicals (including foods) and physical agents in the form of radiation, but not living organisms that cause infectious diseases.[4]

The discipline of toxicology provides scientific information relevant to the following questions:

1. What hazards does a chemical or physical agent present to human populations or the environment?
2. What degree of risk is associated with chemical exposure at any given dose?

Toxicological studies, by themselves, rarely offer direct evidence that a disease in any one individual was caused by a chemical exposure. However, toxicology can provide scientific information regarding the increased risk of contracting a disease at any given dose and help rule out other risk factors for the disease. Toxicological evidence also explains how a chemical causes a disease by describing metabolic, cellular, and other physiological effects of exposure.

1. Casarett and Doull's Toxicology: The Basic Science of Poisons 13 (Curtis D. Klaassen ed., 5th ed. 1996).

2. A discussion of more modern formulations of this principle, which was articulated by Paracelsus in the sixteenth century, can be found in Ellen K. Silbergeld, *The Role of Toxicology in Causation: A Scientific Perspective*, 1 Cts. Health Sci. & L. 374, 378 (1991).

3. Some substances, such as central nervous system toxicants, can produce complex and nonspecific symptoms, such as headaches, nausea, and fatigue.

4. Forensic toxicology, a subset of toxicology generally concerned with criminal matters, is not addressed in this reference guide, since it is a highly specialized field with its own literature and methodologies which do not relate directly to toxic tort or regulatory issues.

A. Toxicology and the Law

The growing concern about chemical causation of disease is reflected in the public attention devoted to lawsuits alleging toxic torts, as well as in litigation concerning the many federal and state regulations related to the release of potentially toxic compounds into the environment. These lawsuits inevitably involve toxicological evidence.

Toxicological evidence frequently is offered in two types of litigation: tort and regulatory. In tort litigation, toxicologists offer evidence that either supports or refutes plaintiffs' claims that their diseases or injuries were caused by chemical exposures.[5] In regulatory litigation, toxicological evidence is used to either support or challenge government regulations concerning a chemical or a class of chemicals. In regulatory litigation, toxicological evidence addresses the issue of how exposure affects populations rather than addressing specific causation, and agency determinations are usually subject to the court's deference.[6]

B. Purpose of the Reference Guide on Toxicology

This reference guide focuses on scientific issues that arise most frequently in toxic tort cases. Where it is appropriate, the reference guide explores the use of regulatory data and how the courts treat such data. The reference guide provides an overview of the basic principles and methodologies of toxicology and offers a scientific context for proffered expert opinion based on toxicological data.[7] The reference guide describes research methods in toxicology and the relationship between toxicology and epidemiology, and it provides model questions for evaluating the admissibility and strength of an expert's opinion. Following each question is an explanation of the type of toxicological data or information that is offered in response to the question, as well as a discussion of its significance.

5. *See, e.g.*, General Elec. Co. v. Joiner, 522 U.S. 136 (1997); Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993).

6. *See, e.g.*, Troy Corp. v. Browner, 129 F.3d 1290 (D.C. Cir. 1997) (EPA's decision to list chemical under Emergency Planning and Community Right to Know Act supported by substantial evidence in that animal studies demonstrated significant increases in pathology); AFL-CIO v. OSHA, 965 F.2d 962, 969–70 (11th Cir. 1992) (determinations of the Secretary of Labor are conclusive if supported by substantial evidence); Simpson v. Young, 854 F.2d 1429, 1435 (D.C. Cir. 1988) (toxicology research methods approved by the Food and Drug Administration (FDA) given deference by the court).

7. The use of toxicological evidence in regulatory decision making is discussed in more detail in Richard A. Merrill, *Regulatory Toxicology*, *in* Casarett and Doull's Toxicology: The Basic Science of Poisons, *supra* note 1, at 1011. For a more general discussion of issues that arise in considering expert testimony, see Margaret A. Berger, The Supreme Court's Trilogy on the Admissibility of Expert Testimony § IV, in this manual.

C. Toxicological Research Design

Toxicological research usually involves exposing laboratory animals (in vivo research) or cells or tissues (in vitro research) to chemicals, monitoring the outcomes (such as cellular abnormalities, tissue damage, organ toxicity, or tumor formation), and comparing the outcomes with those for unexposed control groups. As explained below,[8] the extent to which animal and cell experiments accurately predict human responses to chemical exposures is subject to debate.[9] However, because it is often unethical to experiment on humans by exposing them to known doses of chemical agents, animal toxicological evidence often provides the best scientific information about the risk of disease from a chemical exposure.[10]

In contrast to their exposure to drugs, only rarely are humans exposed to environmental chemicals in a manner that permits a quantitative determination of adverse outcomes.[11] This area of toxicological research, known as clinical toxicology, may consist of individual or multiple case reports, or even experimental studies in which individuals or groups of individuals have been exposed to a chemical under circumstances that permit analysis of dose–response relationships, mechanisms of action, or other aspects of toxicology. For example, individuals occupationally or environmentally exposed to polychlorinated biphenyls (PCBs) prior to prohibitions on their use have been studied to determine the routes of absorption, distribution, metabolism, and excretion for this chemical. Human exposure occurs most frequently in occupational settings where workers are exposed to industrial chemicals like lead or asbestos; however, even under these circumstances, it is usually difficult, if not impossible, to quantify the amount of exposure. Moreover, human populations are exposed to many other chemicals and risk factors, making it difficult to isolate the increased risk of a disease that is due to any one chemical.[12]

Toxicologists use a wide range of experimental techniques, depending in part on their area of specialization. Some of the more active areas of toxicological research are classes of chemical compounds, such as solvents and metals; body system effects, such as neurotoxicology, reproductive toxicology, and immunotoxicology; and effects on physiological processes, including inhalation toxicology, dermatotoxicology, and molecular toxicology (the study of how chemicals

8. *See infra* §§ I.D, III.A.

9. The controversy over the use of toxicological evidence in tort cases is described in Silbergeld, *supra* note 2, at 378.

10. *See, e.g.*, Office of Tech. Assessment, U.S. Congress, Reproductive Health Hazards in the Workplace 8 (1985).

11. However, it is from drug studies in which multiple animal species are compared directly with humans that many of the principles of toxicology have been developed.

12. *See, e.g.*, Office of Tech. Assessment, U.S. Congress, *supra* note 10, at 8.

interact with cell molecules). Each of these areas of research includes both in vivo and in vitro research.[13]

1. *In vivo research*

Animal research in toxicology generally falls under two headings: safety assessment and classic laboratory science, with a continuum in between. As explained in section I.E, safety assessment is a relatively formal approach in which a chemical's potential for toxicity is tested in vivo or in vitro using standardized techniques often prescribed by regulatory agencies, such as the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA).

The roots of toxicology in the science of pharmacology are reflected in an emphasis on understanding the absorption, distribution, metabolism, and excretion of chemicals. Basic toxicological laboratory research also focuses on the mechanisms of action of external chemical and physical agents. It is based on the standard elements of scientific studies, including appropriate experimental design using control groups and statistical evaluation. In general, toxicological research attempts to hold all variables constant except for that of the chemical exposure.[14] Any change in the experimental group not found in the control group is assumed to be perturbation caused by the chemical. An important component of toxicological research is dose–response relationships. Thus, most toxicological studies generally test a range of doses of the chemical.[15]

a. Dose–response relationships

Animal experiments are conducted to determine the dose–response relationships of a compound by measuring the extent of any observed effect at various doses and diligently searching for a dose that has no measurable physiological effect. This information is useful in understanding the mechanisms of toxicity and extrapolating data from animals to humans.[16]

b. Acute toxicity testing—lethal dose 50 (LD50)

To determine the dose–response relationship for a compound, a short-term lethal dose 50 (LD50) is derived experimentally. The LD50 is the dose at which a compound kills 50% of laboratory animals within a period of days to weeks.

13. *See infra* §§ I.C.1, I.C.2.

14. *See generally* Alan Poole & George B. Leslie, A Practical Approach to Toxicological Investigations (1989); Principles and Methods of Toxicology (A. Wallace Hayes ed., 2d ed. 1989); *see also* discussion on acute, short-term, and long-term toxicity studies and acquisition of data in Frank C. Lu, Basic Toxicology: Fundamentals, Target Organs, and Risk Assessment 77–92 (2d ed. 1991).

15. Rolf Hartung, *Dose–Response Relationships, in* Toxic Substances and Human Risk: Principles of Data Interpretation 29 (Robert G. Tardiff & Joseph V. Rodricks eds., 1987).

16. *See infra* §§ I.D, III.A.

TAB P

federal register

FRIDAY, JULY 29, 1977
PART V

CONSUMER PRODUCT SAFETY COMMISSION

■

RESPIRABLE FREE-FORM ASBESTOS

Proposed Rulemaking

CONSUMER PRODUCT SAFETY COMMISSION

[16 CFR Part 1145]

RESPIRABLE FREE-FORM ASBESTOS

Proposed Rules to Regulate Consumer Patching Compounds and Artificial Emberizing Materials (Embers and Ash) Containing Respirable Free-Form Asbestos, Under the Consumer Product Safety Act

AGENCY: Consumer Product Safety Commission.

ACTION: Proposed rule.

SUMMARY: The Commission proposes to regulate consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos under the Consumer Product Safety Act (CPSA) instead of the Federal Hazardous Substances Act (FHSA), to address the risk of cancer associated with inhalation of asbestos fibers. According to the CPSA, the Commission may not regulate under the CPSA a risk of injury that could be eliminated or reduced to a sufficient extent under the FHSA, unless the Commission finds by rule that it is in the public interest to do so. The Commission has preliminarily found that it is in the public interest to regulate these products under the CPSA.

DATES: Comments concerning this proposal must be received by August 29, 1977.

ADDRESS: Comments should be sent to: Office of the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207.

FOR FURTHER INFORMATION CONTACT:

John Liskey, Office of Program Management, Consumer Product Safety Commission, Washington, D.C. 20207 (301-492-6557).

SUPPLEMENTARY INFORMATION: The purpose of this notice is to propose a rule under section 30(d) of the Consumer Produce Safety Act, (CPSA), 15 U.S.C. 2079(d), to regulate consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the CPSA. Although the risk of injury from lung cancer and mesothelioma associated with these products could be eliminated or reduced to a sufficient extent by action under the Federal Hazardous Substances Act (FHSA), 15 U.S.C. 1261-1274, the Commission has preliminarily determined that it is in the public interest to regulate these products under the CPSA.

The Commission believes that it is in the public interest to regulate these consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the CPSA rather than the FHSA, since the rulemaking proceedings appropriate to regulate these products under the FHSA are likely to be lengthy and resource-consuming.

The Commission also believes it is in the public interest to regulate these products under the CPSA since it may be more difficult for interested persons to participate in rulemaking proceedings under the FHSA than the CPSA because the proceedings under the FHSA are likely to be more complex and formal.

In order to ban hazardous household substances under section 2(q)(1)(B) of the FHSA, the Commission must follow the provisions of section 701(e) of the Federal Food, Drug, and Cosmetic Act (FFDCA), 21 U.S.C. 371(e). Section 701(e) of the FFDCA provides for a two stage rulemaking. After the Commission proposes a regulation, analyses comments, and issues a final regulation, adversely affected persons may submit objections to the rule and request a public hearing on the objections. If the objections are legally valid, those parts of the regulation objected to are stayed and a hearing is held to receive evidence that is relevant and material to the issues raised by the objections.

After completion of the hearing, the Commission may issue a final regulation. However, this regulation must be based only on substantial evidence of record obtained at the hearing, and must set forth detailed findings of fact on which the order is based. The Commission's past experience with formal rulemaking under section 701(e) has been that these proceedings are lengthy, resource-consuming, and often inefficient in eliciting information on which the Commission may make a decision.

In contrast, section 9(a)(2) of the CPSA requires bans to be issued in accordance with the informal rulemaking provisions of the Administrative Procedure Act (5 U.S.C. 553). Although the CPSA requires the Commission to provide an opportunity for oral presentation of comments before issuing a ban, the oral presentation required by section 9(a)(2) is informal and nonadversarial. A ban under section 8 of the CPSA, while providing an adequate opportunity for public participation, is less likely to involve extensive delay, since the Commission is not required to utilize formal rulemaking. In addition, since the proceedings under section 8 of the CPSA are less complex and formal than those under the FHSA, the Commission is more likely to obtain participation from interested persons, including consumers, than if the rulemaking is conducted under the FHSA.

The Commission has also preliminarily determined that it is in the public interest to regulate consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the CPSA rather than the FHSA, since the CPSA, unlike the FHSA, provides that persons who knowingly violate the Act are subject to civil penalties. The civil penalty provision may provide additional incentive for compliance under the CPSA.

However, if the Commission does decide to regulate these products under section 8 of the CPSA, the Commission recognizes that automatic repurchase of banned hazardous products would not be available, as it is in the case of a ban under the FHSA. Under section 15 of the FHSA, 15 U.S.C. 1274, and the accompanying regulations at 16 CFR 1500.-202 and .203, hazardous substances that have been banned must be repurchased by the manufacturers, distributors, and retailers of the hazardous substance, regardless of whether the substance was banned at the time of its sale. In contrast, a ban under section 8 of the CPSA that bans products distributed in commerce on the effective date of the ban would not provide for repurchase of the banned hazardous products distributed in commerce.

PROPOSAL

The Commission therefore proposes below to regulate consumer patching compounds and artificial emberizing materials containing respirable free-form asbestos under the CPSA instead of the FHSA.

Accordingly, pursuant to provisions of the Consumer Product Safety Act (sec. 30(d), Pub. L. 92-573, 86 Stat. 1231, as amended 90 Stat. 510; 15 U.S.C. 2079(d)), the Commission proposes that Title 16, Chapter II, Subchapter B, Part 1145 be amended by adding the following new § 1145.4:[1]

§ 1145.4 Consumer patching compounds containing respirable free-form asbestos; risk of cancer associated with inhalation of asbestos fibers.

The Commission finds that it is in the public interest to regulate the risk of cancer associated with inhalation of asbestos fibers from consumer patching compounds under the Consumer Product Safety Act rather than under the Federal Hazardous Substances Act because of the desirability of avoiding possibly lengthy, resource-consuming, and inefficient rulemaking proceedings under the Federal Hazardous Substances Act and because of the availability of civil penalties under the CPSA.

The Commission also believes that the complexity and formality of the rulemaking proceedings under the FHSA, in contrast to rulemaking proceedings under the CPSA, may make it difficult for interested persons to participate.

Therefore, consumer patching compounds containing asbestos shall be regulated under the CPSA.

(Sec. 30(d), Pub. L. 92-573, 86 Stat. 1231, as amended, 90 Stat. 510 (15 U.S.C. 2079(d)).)

§ 1145.5 Emberizing materials (embers and ash) containing respirable free-form asbestos; risk of cancer associated with inhalation of asbestos fibers.

The Commission finds that it is in the public interest to regulate the risk of cancer associated with inhalation of asbestos fibers under the Consumer Product Safety Act rather than under

[1] EDITORIAL NOTE: Part 1145 consisting of §§ 1145.1 and 1145.2 was proposed at 41 FR 33858 (August 10, 1976). Section 1145.3 was proposed at 42 FR 35884 (July 13, 1977).

the Federal Hazardous Substances Act because of the desirability of avoiding possibly lengthy, resource-consuming, and inefficient rulemaking proceedings under the Federal Hazardous Substances Act and because of the availability of civil penalties under the CPSA. The Commission also believes that the complexity and formality of the rulemaking proceedings under the FHSA, in contrast to rulemaking proceedings under the CPSA, may make it difficult for interested persons to participate. Therefore, emberizing material containing respirable free-form asbestos shall be regulated under the CPSA.

(Sec. 30(d), Pub. L. 92-573, 86 Stat. 1231 as amended, 90 Stat. 519 (15 U.S.C. 2079(d)))

Interested persons are invited to submit, on or before August 29, 1977 written comments regarding this proposal. Written comments and any accompanying data or material should be submitted preferably in five copies, addressed to the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207. Comments may be accompanied by a memorandum or brief in support thereof. Received comments may be seen in the Office of the Secretary, Third Floor, 1111 18th St. NW., Washington, D.C. during working hours Monday through Friday.

Dated: July 26, 1977.

SHELDON D. BUTTS,
Assistant Secretary, Consumer Product Safety Commission.

[FR Doc.77-21843 Filed 7-28-77;8:45 am]

[16 CFR Parts 1304 and 1305]

RESPIRABLE FREE-FORM ASBESTOS

Proposal To Ban Certain Patching Compounds and Artificial Emberizing Materials (Embers and Ash)

AGENCY: Consumer Product Safety Commission.

ACTION: Proposed banning rules.

SUMMARY: In this document, the Commission proposes to ban two consumer products containing asbestos that can be inhaled (respirable, free-form asbestos): (1) consumer patching compounds used to join or repair interior walls and ceilings (mixing of the product before it is applied and sanding of the product after it is applied releases asbestos fibers that can be inhaled) and (2) artificial emberizing materials (embers and ash) made with respirable free-form asbestos for use in fireplaces to simulate live embers and ash. Based on information discussed in this notice, the Commission believes that certain types of cancer may result from inhaling asbestos fibers released during the use of these products.

Part A of the preamble to this document deals with the general characteristics of asbestos that are applicable to both products proposed to be banned. Part B deals with consumer patching compounds. Part C deals with artificial emberizing materials.

DATES: (1) For consumer patching compounds containing respirable free-form asbestos, the proposed effective date is 30 days after publication of any final banning rule. Written comments on the proposal must be submitted by August 29, 1977. There will be an opportunity for interested persons to orally present data, views, or arguments on Monday, August 15, 1977 at 10 a.m., at the Commission hearing room, 3rd Floor, 1111 18th Street NW., Washington, D.C. Those wishing to make oral presentations should notify the Office of the Secretary by August 8, 1977.

(2) For artificial emberizing materials containing respirable free-form asbestos, the proposed effective date is the day of publication of any final banning rule. Written comments on the proposal must be submitted by August 29, 1977. There will be an opportunity for interested persons to orally present data, views, or arguments on Monday, August 15, 1977 at 10 a.m. Those wishing to make oral presentations should notify the Office of the Secretary by August 8, 1977.

ADDRESSES: Written comments should be submitted to the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207. Persons wishing to make oral presentations should contact Richard A. Danca in the Office of the Secretary 202-634-7700. All material which the Commission has that is relevant to this proceeding, including any comments that may be received on this proposal, may be seen in, and copies may be obtained from the Office of the Secretary of the Commission, 3rd Floor, 1111 18th Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT:

John Liskey, Office of Program Management, Consumer Product Safety Commission, Washington, D.C. 20207 (301-492-6557).

SUPPLEMENTARY INFORMATION: The Commission has received the following three petitions requesting the banning of consumer patching compounds and artificial emberizing materials (embers and ash) containing respirable free-form asbestos:

HP 76-18: On July 15, 1976, the Natural Resources Defense Council (NRDC) and Consumers Union (CU) petitioned the Commission under the Federal Hazardous Substances Act (FHSA) to ban consumer patching compounds containing asbestos that are used for drywall taping, spackling and sealing of points. The petitioners believe that high quantities of asbestos fibers remain in the air after these products are sanded and the the fibers substantially increase the risk of mesothelioma and lung cancer.

HP 77-9: On February 9, 1977, the Public Citizens Health Research Group (HRG) petitioned the Commission under the FSHA in part to declare that patching compounds made with tremolitic talc containing asbestos fibers (tremolite asbestos) are banned hazardous products and an imminent hazard to the public health.

HP 77-11: On April 15, 1977, a request from Ms. Rachel Scott, that the Commission had investigated as a consumer complaint, was joined by the Environmental Defense Fund (EDF). The Commission designated the requests a petition to ban artificial emberizing materials containing respirable free-form asbestos. This product is used on artificial logs and on fireplace floors beneath them to simulate live embers and ashes.

(The parenthetical numbers listed below are citations to a list of documents consulted by the staff; the list appears below just before Conclusion and Proposal.)

The Commission has granted these petitions regarding asbestos, based on information discussed more fully below. The information consists, primarily, of data on exposure of industrial workers to respirable free-form asbestos (8) and also occasional exposures of families of workers and others in locations where free-form asbestos might be prevalent, as well as in other location (47, 31, 38). Information on exposure of the public to free-form asbestos contained in individual consumer products is limited. However, there is general scientific and medical agreement that there is no known threshold level below which it is safe for people to be exposed to respirable free-form asbestos (35). Therefore, based on the available information the Commission has decided to propose a ban of these two products. In addition, information on other consumer products that may contain respirable free-form asbestos will continue to be developed in order to determine whether further regulation is necessary.

The petitions, relevant scientific and technical information, and Commission conclusions are more fully described below.

Although the three petitions were filed under the Federal Hazardous Substances Act (FHSA), 15 U.S.C. 1261, et seq., and it appears that the risks of injury from lung cancer and mesothelioma described by petitioners are regulatable under the FHSA, the Commission proposes to ban these products under the Consumer Product Safety Act (CPSA), 15 U.S.C. 2051, et seq. Section 30(d) of the CPSA, 15 U.S.C. 2064(d), as amended, provides that a risk of injury associated with a consumer product which can be eliminated or reduced to a sufficient extent by action under a transferred Act, such as the FHSA, may nevertheless be regulated under the CPSA if the Commission, by rule, determines that regulation under the CPSA is in the public interest. Also published in this issue of the FEDERAL REGISTER are proposed rules issued in accordance with section 30(d) of the CPSA stating the Commission's finding that it is in the public interest to ban the products described herein under the CPSA.

PART A. BACKGROUND

"Asbestos" is a general term for any of several varieties of mineral fibers composed of silica, oxygen, hydrogen, and other elements such as sodium, calcium, iron, or magnesium. The name is derived from the ancient Greek term for

"incombustible". There are six basic varieties of asbestos minerals which are found in fiber form: chrysotile (the most common variety, and that ordinarily found in asbestos-containing products), amosite, crocidolite, actinolite asbestos, tremolite asbestos, and anthophyllite asbestos. Most of the world supply of commercial asbestos is chrysotile, the fibrous form of serpentine.

Asbestos minerals all have nonfibrous counterparts of the same chemical composition and crystal structure which are more abundant and widespread than the asbestiform variety but the crystallization of these normally nonfibrous minerals into fibrous forms is a rare occurrence in nature. (June 3, 1977, CPSC/Health Sciences, (7).)

Asbestiform minerals are generally characterized by the following properties: their ability to be broken down into smaller fibrils; great elongation; heat resistance; resistance to biotransformation; flexibility; high-tensile strength, and spinnability.

DISEASES RELATED TO ASBESTOS EXPOSURE

It is important to note that the asbestos content of a given product is not necessarily the sole criterion of that product's relative health risk, for in numerous products the fibers are tightly bound or are encapsulated in the product composition. A potential health risk occurs when asbestos fibers become airborne, such as by mixing, sanding, or cleanup operations when using patching compounds. A single individual engaged in such a process may be exposed to potential asbestos fiber inhalation risk and may also cause exposure of other individuals in the vicinity.

Certain malignancies are related to exposure to asbestiform minerals. Both animal bioassay data and epidemiological studies support this conclusion.

All commercially available forms of asbestos which have been tested are carcinogenic in mice, rats, hamsters, and rabbits (IARC, 22).

Some conclusions from a Review (Huff, 21) of the major literature on asbestos are:

1. Under experimental conditions, asbestos is pathogenic in animals. Asbestos is known to be carcinogenic in humans, causing lung cancer, mesotheliomas, and pleural lesions.

2. The mechanisms of pathogenicity are poorly understood. The etiological significance of fiber size or type is controversial, and the physiochemical properties of various asbestos types as related to biological effects are incompletely defined.

3. Little is known about the clearance rates of asbestos from tissues, the transport of asbestos within the organism, or the metabolic alteration of asbestos in the body.

4. Animal models necessary to accurately predict the potential effects of asbestos in humans have not been developed.

5. Quantitative dose-response relationships between asbestos inhalation and related diseases have not been determined for animals or humans, and minimal exposure levels required to cause disease are not known.

6. Malignancies can arise 20 years or more after occupational exposure; however, they also reportedly result from indirect, non-occupational exposure.

7. Available data indicate that asbestos is a widespread environmental pollutant.

The most common diseases that might result from asbestos exposure are:

1. Asbestosis: a diffuse, interstitial, nonmalignant, scarring of the lungs;

2. Bronchogenic carcinoma: a malignancy of the interior of the lung;

3. Mesothelioma: a diffuse malignancy of the lining of the chest cavity (pleural mesothelioma), or of the lining of the abdomen (peritoneal mesothelioma);

4. Cancer of the stomach, colon, and rectum.

Asbestosis may be evidenced, in its advanced stages, by characteristic manifestations on X-ray films, by restrictive pulmonary function, or by clinical signs of finger clubbing or rales (dry, crackling sounds within the lung). Its most important symptom is dyspnea, or undue shortness of breath. The disease is progressive, even in the absence of further exposure, as those inhaled fibers which have been trapped within the lung continue their biological action. In its severe forms, death results from the inability of the body to obtain requisite oxygen or from the heart's failure to pump blood through the scarred lungs.

Mesotheliomas tumors are diffuse and spread rapidly throughout the cavity of origin. They have yet to be successfully cured by any type of treatment, including chemotherapy, radiation, or surgery. Death usually results within a year of diagnosis. It may account for one death in several thousand in the absence of an environmental or occupational asbestos exposure. In some groups of asbestos workers, it may account for one death in ten.

Once established, the other asbestos-associated cancers differ little from those occurring in the general population, although there may be variations in the location of the primary site. Appropriate treatment and prognosis follow for the particular tumor. There is very limited long term survival from lung cancer therapy; and only somewhat better from treated cancer of the colon or rectum.

Asbestosis and asbestos cancer, whether it be lung cancer, pleural mesothelioma, peritoneal mesothelioma, cancer of the stomach, colon, or rectum usually do not become clinically evident until more than 20 years have passed from onset of exposure. The long latency period is now widely recognized.

While some such cancers may appear during the second decade following onset of occupational exposure, peak incidence is often not noted until 20 years or more from initial exposure. This is true both with regular, long-term, brief or intermittent exposures. While variations in the time of occurrence may depend upon intensity and duration of exposure, with heavier exposure often being associated with shorter latency periods, variations among individual cases make it impossible to predict the latency period for the risk of any particular person.

Clinical data are becoming available concerning asbestos lung scarring in individuals exposed at levels much lower than those of occupational circumstances. Among 210 family contacts of former asbestos factory workers, 38% have been reported to have X-ray changes characteristic of asbestos exposure (Anderson, Selikoff, Lilis and Daum, 1975, (1)).

In humans, the latency period for chemical carcinogens may well extend from 20 to 40 years or more. Analogous latency periods have also been demonstrated in animal studies. This means that the disease may undergo a long period of development before a tumor is actually detected.

Cancer development may be influenced by such factors as the differing susceptibility of various body organs. In animal studies it has been found that individual variability in response to carcinogens is great depending upon factors such as age, sex, hormonal status, diet, and genetic factors. Thus, individuals biologically compromised may be more susceptible than other groups.

CANCERS ASSOCIATED WITH ASBESTOS

In December 1972, important new information on the spectrum of asbestos cancers was presented at the Conference on the Biological Effects of Asbestos, sponsored by the International Agency for Research on Cancer of the World Health Organization. At this conference, and subsequently, data on large groups of asbestos workers became available (Selikoff, Hammond and Seidman, 1973 (41); Enterline, de Conde and Henderson, 1972 (12)). As expected, the high risk of bronchogenic carcinoma and mesothelioma persisted among groups of factory workers. Moreover, these later studies confirmed the excess gastrointestinal cancer that had been suggested earlier, and extended the spectrum of asbestos related cancers.

(1) Lung cancer. The most important cancer afflicting asbestos workers is cancer of the lung, although mesothelioma has attracted considerable attention because of the high frequency among asbestos workers and infrequent occurrence in the population as a whole.

In many groups of asbestos workers, approximately 20% of all deaths are caused by lung neoplasms. This has been true both among asbestos product factory workers (Selikoff, Hammond and Churg, 1972 (42); and Nicholson, 1976 (35)), and among users of these products (Selikoff, Hammond and Seidman, 1973 (41)). The exact percentage varies with circumstances of exposure, age of the workers, duration of the workers' exposure and, perhaps most of all, according to the duration from the onset of their asbestos work history. In addition, the last several years have seen the discovery of another critical variable affecting the incidence of lung cancer among asbestos workers. In 1965, Selikoff and Hammond

(38) reported that lung cancer was not significantly increased in incidence among asbestos workers with no history of cigarette smoking, although when such history was present, the incidence of lung cancer increased markedly over what would be expected among other cigarette smokers, in the absence of asbestos exposure. Thus, these scientists calculated that an asbestos worker who smoked cigarettes had 92 times the risk of dying of lung cancer, as compared with like individuals without cigarette smoking or asbestos work. This finding has been confirmed by larger studies (Hammond and Selikoff, 1973 (17)) where, again, it was found that non-smoking asbestos workers had few lung cancers while those who smoked had much more lung cancer than would have been expected had they not been asbestos workers. Calculations suggest that cigarette-smoking asbestos workers have approximately eight times the risk of developing lung cancer compared to other cigarette smokers who are not occupationally exposed to asbestos.

(2) Pleural and peritoneal mesothelioma. In 1960 Wagner, Sleggs and Marchand (47) demonstrated an important association between asbestos exposure and pleural mesothelioma. This cancer, which appears to be unrelated to smoking, had previously been considered to be a very rare tumor. Numerous reports have confirmed the finding of Wagner and his colleagues that mesothelioma can be commonly associated with asbestos exposure. A subsequent report by Entickmap and Smither, 1964, (13) concerning workers in a British asbestos factory demonstrated that the same tumor could be commonly found in the abdomen (peritoneal mesothelioma), as well as in the chest.

The exact risk of death of these invariably fatal neoplasms has not been as well defined as has lung cancer, although records of cases from hospitals near one large asbestos factory indicate that it must be very common (Barrow, Conston, Livornese and Schalet, 1967, (3)). Information available from the experience of asbestos insulation workers suggests that approximately five to seven percent of deaths may be due to this neoplasm (Hammond, Selikoff and Churg, (17); Selikoff, Hammond and Seidman, 1973, (41)). More recently, it has been suggested that this estimate is too low, on the basis of the experience of workers in a British asbestos factory where calculations predicted that between 10 and 11 percent of deaths would be due to mesothelioma (Newhouse and Berry, 1975, (30)).

A recent study of mesotheliomas diagnosed in a hospital located in the vicinity of a shipyard reported an increased incidence of diffuse malignant mesotheliomas since World War II, not only among exposed shipyard workers, but also among individuals with no occupational exposure. (Hazan, (20)).

(3) Gastro-intestinal cancer. Gastro-intestinal cancers (cancer of the stomach, colon and rectum) are also increased in incidence among asbestos workers. A number of studies now indicate that the increase is on the order of two or three times the number of expected tumors (Selikoff, Hammond and Seidman, 1973, (41), Elmes and Simpson, 1971 (9)). Although this increased risk is relatively limited, especially when compared with lung cancer and mesothelioma, it is nevertheless of considerable importance since a two- or three-fold increase in such common tumors becomes an important cause of death for the workers involved.

It has been suggested that other tumors are also increased in incidence among asbestos workers, particularly cancers of the larynx (Stell and McGill, 1973 (45); Newhouse and Berry, 1975 (30)), and of the esophagus (Selikoff, Hammond, and Seidman, 1973 (41)). However, data concerning these neoplasms are less extensive than for lung cancer, mesothelioma and gastro-intestinal cancer and further experiences are awaited. In any case, they are not very common tumors in general and any increase does not weigh heavily on the overall cancer risk of asbestos workers.

Occupational Exposures

Reports of pulmonary fibrosis or lung scarring, from inhalation of asbestos dust in factories began to appear in the literature in the early part of this century and by 1927 this lung scarring disease was known as "asbestosis" (Newhouse, 31)).

In 1930, the British Home Office Survey by Merewether and Price (26), found that approximately half of a population of asbestos factory workers were suffering from pulmonary fibrosis, leading to the introduction of the Asbestos Factory Regulations of 1931. The objective of the Regulations, implemented in 1933, was to reduce the risk of asbestosis.

It was recognized, however, that in addition to asbestos-induced lung scarring, there was also increasing evidence of cancer associated with asbestos exposure. Some workers whose deaths were attributed to asbestosis were also found to have had lung cancer. (Nicholson, (25)).

By 1960, through epidemiological studies, an association between asbestos exposure and mesothelioma had been demonstrated (Wagner (47)) and was soon substantiated by additional epidemiological studies (Newhouse (31), Selikoff (37)) and clinical diagnosis.

In 1968, the Committee of the British Occupational Hygiene Society evaluated worker exposure data in a large asbestos textile mill dating from implementation of the Asbestos Regulations of 1933 which indicated that there was "comparatively little clinical and/or roentgenological evidence of asbestosis" at that factory in a survey completed in 1966. Based on that data, the Committee concluded by setting a dust exposure level at 100 fiber-years/ml (or .2 fibers/ml for 50 years) it would provide a full working lifetime without substantial risk of developing asbestosis. (OSHA, 1975, (18)).

The National Institute of Occupational Safety and Health (NIOSH) relied heavily on the British Standard in its recommendation for promulgation of the asbestos standard set by OSHA in 1972.

Subsequent to the implementation of the OSHA permanent asbestos standard in 1972, results of a new evaluation of the earlier British factory worker population showed many abnormal X-ray findings of the lungs and pleura.

It is reported that there is now an excess lung cancer mortality rate among workers who became employed at the textile mill after 1933 and whose lack of clinical or X-ray evidence of asbestosis led to the development of the British asbestos standard.

Another report of an ongoing study of workers (and their family members) in a factory producing amosite asbestos between 1941 and 1954, when the factory closed, has shown a high incidence of X-ray abnormalities and 2 pleural mesothelioma deaths have thus far been identified (1).

It is also reported that clinical data are becoming available concerning asbestos lung scarring in individuals exposed at much lower than occupational levels. (Anderson, (1)).

It therefore appears that an exposure thought sufficiently low to reduce the risk of asbestosis has not prevented pathogenic changes, including lung cancer and mesothelioma. (Anderson, (1)).

Non-occupational, Indirect Occupational Exposure, or Intermittent or Brief Exposures

Recent data indicate the occurrence of asbestos cancer from exposure to low levels of asbestos, as in environmental circumstances, or from brief or intermittent exposures to higher levels.

In inhalation exposure experiments, rats exposed to asbestos dust were reported to have developed tumors, including mesotheliomas, from as little as a single 7 hours exposure (48).

Analysis of the history of asbestos exposure among individuals in a large series of cases of mesothelioma in Great Britain and South Africa have provided evidence that brief or intermittent exposure to asbestos may, after the passage of decades, result in mesothelioma (Greenberg and Davies, 1974 (16); Webster, 1973, (48)). In such circumstances, it appears that the lifetime exposure was less than 100 fibers-years/ml. The same discrepancy between present projected exposures and the risks of asbestos cancer exists when considering cases of mesothelioma resulting from household contact with asbestos among members of families of asbestos workers (Lillington, 1974 (23)), or among residents living in the vicinity of asbestos plants. Of considerable industrial importance has been the recent description of asbestos disease among shipbuilding and ship repair workers, few of whom actually work with asbestos, but many of whom were, in the past, inadvertantly exposed to the asbestos dust resulting from the use of asbestos products by a relatively few of their workmates. In 1968, Harries of

the Royal Navy (19) reported cases of mesothelioma among shipyard workers at the Royal Navy dockyard in Devenport, in trades which did not directly involves worker exposure to asbestos, but in which there had been occasional opportunity for exposure merely by virtue of working in the same areas. This original finding has been widely confirmed and numerous cases of mesothelioma have since been reported in former shipyard workers (Whitewell and Rawcliffe, 1970 (50)); McEwan et al, 1970 (27)); Stumphius, 1971 (46); Greenberg and Davies, 1974, (16). Studies of populations of current shipyard workers have shown much radiological evidence of asbestos abnormalities among workers in trades only indirectly exposed to asbestos in the yards (Sheers and Templeton, 1968 (44); Fletcher, 1972, (15)).

Further, evidence has indicated that asbestos also acts as a lung carcinogen at levels much below those which will produce asbestosis. Two surveys of shipyard workers who had X-ray evidence of pleural plaques, but generally not of pulmonary fibrosis, showed a 2.5-fold excess risk of death from lung cancer and high risk of mesothelioma. (Fletcher, 1972 (15); Edge, 1975 (8)). In a study of the mortality experience of a large U.S. asbestos products manufacturing facility, it was found that workers in low dust areas, with a minimum risk of death from asbestosis, had the same high risk of death from various cancers as workers in dustier areas (Nicholson, 1975, (35)).

It is extremely difficult, if not impossible, to document brief exposures reported to have occurred 20 or more years before the onset of symptoms. To determine the type and extent of non-occupational exposure, the investigator must generally rely on relatives or persons other than the exposed patient for exposure history.

Much of the foregoing information on asbestos-related diseases was prepared by the Occupational Safety and Health Administration (OSHA) and published at 40 FR 47651, October 9, 1975, "Occupational Exposure to Asbestos" has been helpful in preparing this proposal (6)).

CONSUMER EXPOSURE

Reports of the hazard, or potential for hazard, from exposure to asbestos resulting from use of asbestos-containing consumer products are very limited. The only known quantitative study of asbestos levels in products regulated by this Commission was reported by Rohl, et al (1975 (36)), of asbestos fiber concentrations measured during the use of consumer spackling patching and taping compounds. This study indicated that airborne fiber concentrations, exceeding the interim OSHA allowable excursion exposure level, were detected during application and cleanup operations. Fibers were detected in adjacent rooms during mixing operations and it was reported that " " " significant concentrations of asbestos remained suspended and could pervade living quarters for a considerable duration of time " " " The authors suggest that the use of spackling and other patching compounds (in mixing, and sanding and cleanup operations) may expose the user and other members of the household to " " " significant concentrations of asbestos".

Asbestos in the household presents a great risk due to the presence in the household of persons, such as children, who may be particularly vulnerable to carcinogens. It is generally observed that, because of the long latency period, exposure to inhalable asbestos in the some can be life-shortening for children. In this connection, Dr. Paul Kotin of the Johns-Manville Company, stated to an OSHA Advisory Committee that in his laboratory experience, cancer can be most readily induced in the young (14). This point was further clarified at a briefing before the Commission on June 9, 1977 during which Dr. Kotin stated his belief that the young are doubly vulnerable to carcinogens—first, because of a long lifetime ahead and secondly because young children grow at a more rapid rate than adolescents. Thus, he explained, "A rapidly dividing cell, a cell which has a turnover time shorter when compared to another cell, is perhaps more likely to be subject to the action of a carcinogen."

The Commission concludes that exposure to asbestos from either patching compounds or artificial amberizing materials presents an unreasonable risk of injury sufficient that either product standing alone should be banned. The Commission also notes that consumers are exposed to asbestos from sources other than the products proposed for banning. The asbestos fibers are present in the general environment has been demonstrated by studies such as those by Hüff (21), Selikoff, and Harwood (38). Consumers who are exposed to asbestos fibers from artificial embers and ash and patching compounds thus receive additional doses of asbestos and can be presumed to face a greater risk than members of the population who are not so exposed, and a greater cumulative risk than if no asbestos were present in the general environment.

A bibliography of additional scientific and medical literature reviewed by the Commission is noted below and an annotated bibliography is available for review in the Office of the Secretary.

"THRESHOLD" LIMIT

Because of the variability of individual response to carcinogens and other factors, the concept of a "no effect" or "threshold level" of exposure may have little real significance on the basis of existing knowledge. While some level, below which exposure to a carcinogen does not cause cancer, may conceivably exist for any one individual, other individuals may have cancer induced by doses so low as to be effectively zero (35).

In the Proceedings of the Nineteenth Meeting of the Interagency Collaborative Group on Environmental Carcinogenesis devoted to Threshold Evaluated held at the National Institute on August 14, 1975 (23), Dr. H. F. Kraybill, Chairman, states that:

Investigators in the field of carcinogenesis have doubted the existence of a threshold for a carcinogen or at least have maintained that there are no acceptable procedures for assessment of a safe-dose for a carcinogen (i.e. threshold). Thus, it has been concluded that it is not feasible to prove or disprove the presence or absence of a threshold-dose through downward extrapolation from the dose-response curve in regions of detectably significant dosage. The conservatism in this direction is prompted by certain realizations as to the self-replicating nature of the cancer cell, the possible existence of irreversible effects, the aspects of lasting alteration induced by a tumor-producing event, the perpetuation of the neoplastic lesion after the original inducer has disappeared from the milieu, and finally, the possibility of cancer induction from a mutation in a somatic cell.

These theoretical concepts have a bearing on the asbestos issue, particularly as the question of the existence, or nonexistence, of a threshold level of carcinogenic effect. A "no effect" level theoretically may exist, but it has not been demonstrated. Therefore, there is no known threshold level below which exposure to respirable free-form asbestos would be considered safe.

OTHER FEDERAL AGENCY ACTIONS TO REGULATE EXPOSURE TO ASBESTOS

The Occupational Safety and Health Administration of the Department of Labor (OSHA), the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) each has a responsibility to regulate exposure to asbestos.

OSHA regulates exposure to asbestos by workers in all industrial and commercial settings except agriculture. The regulation (29 CFR 1910.1001) states that the 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air. In 1975, OSHA proposed an amendment to lower exposure to 5 fibers per cubic centimeter of breathing air. An OSHA proposal to regulate exposure by workers in the building construction industries is expected to be ready for publication within the next few months.

FDA has banned the use of asbestos in filters used in the formulation of parenteral drugs (21 CFR 211.40(j)) and, prior to the establishment of the Consumer Product Safety Commission, banned the use of asbestos in fabric used for general wearing apparel. (16 CFR 1500.17(a) (7)).

EPA regulates asbestos which is released into the air and into the water. These regulations (40 CFR 61, 427, 436) do not set standards for allowable amounts of asbestos in the breathing air but rather minimize or eliminate emissions from industrial locations. These regulations specifically prohibit the presence of asbestos in emissions from plants manufacturing materials for use in building roadways and in manufacturing items such as cloth, textiles, cement, fireproofing and friction products, paper, felt, floor materials, paints, adhesives,

sealants, caulks, and a variety of other items.

ASBESTOS REGULATIONS AFFECTING CONSUMER PRODUCTS IN OTHER COUNTRIES

In June, 1976, Canada banned the sale and importation of asbestos-containing products for use by children. In April, 1976, England introduced a voluntary labeling scheme for products containing asbestos.

In Sweden, the use of asbestos-cement products for new work was prohibited as of July, 1976, and for maintenance in existing structures will be discontinued by the end of 1977. Manufacturing of these products is not prohibited. According to the Swedish Standard for Occupational Exposure:

"The TLV of 2f/ml was lowered to 1f/ml as of January, 1977, and is scheduled to be further reduced to 0.5 f/ml by 1 January, 1978." (June 27, 1977, Asbestos Information Association (2).)

PART B. PATCHING COMPOUNDS

Asbestos fibers are used in patching compounds to reinforce a material as it cures, to control shrinkage and cracking, and to reinforce the material as the compound is alternately exposed to heat, cold and moisture after curing. Asbestos also provides a measure of sound and heat insulation to the material, and enhances the workability of the compound, particularly during troweling. The properties considered by industry to be most valuable in the preparation of patching compounds are: asbestos is not affected by fungus, mildew, vapor, etc. and it has low density; good adsorption qualities; high resistance to electricity, fire and alkaline substances; low magnetic permeability; and it is not a smooth fiber.

Patching compounds are mixtures of talcs, pigments, clays, casein, ground marble, mica or other similar materials with water and a binding material such as asbestos. Patching compounds are available in dry form (to be mixed with water by the user) or a ready-mix paste form. The product is used to cover, seal or mask cracks, joints, holes and similar openings in the trim, walls, and ceilings, etc. of building interiors.

In patching compounds, asbestos is released when using the dry form and mixing it with water, or by sanding or scraping the dried patching compound in the process of finishing and smoothing the surface as in remodeling and in cleanup operations. Such activities may present a hazard to consumers when the activity is performed either by a consumer or a professional user of these products.

Patching compounds covered by this ban are those that are customarily produced or distributed for sale to or for the personal use, consumption or enjoyment of consumers in or around a permanent or temporary household or residence, a school, in recreation or otherwise. Patching compounds that are labeled as, marketed, and sold solely for industrial use would not be within the scope of this ban. Information available to the Commission indicates that most patching compounds for industrial use are distributed in such ways that consumers have access to these products. Moreover, merely labeling a patching compound for industrial or professional use only, would not exclude such articles from the ban. If the manufacturer, distributor or retailer fosters or facilitates the product's sale to or use by consumers, the product would be considered a consumer product within the scope of this ban.

Recent court cases have examined the statutory definition of consumer product and indicate that the presence of a product in a consumer environment would be considered a primary determinant of whether that product is a consumer product under the CPSA.[1] In considering the statutory definition and its legislative history in light of these cases, it appears to the Commission that substantially all patching compounds are consumer products under the CPSA.

EVALUATION OF THE RISK

In assessing the degree and nature of the risk of injury to consumers, the Commission has reviewed experimental data and human experience information. In addition, on the basis of data by Rohl, et al. (36), the Commission's Health Sciences staff has calculated an assessment of the risk of consumer exposure which is available at the Office of the Secretary. The calculations are based on the application of a theoretical model (modification of that by Enterline and Henderson, 1976, (11)), to epidemiological data cited in the literature, (Shellikoff, Hammond and Seidman, 1973, (41)). For purposes of this assessment, the Commission considered the use of patching compounds by a consumer, for six hours a day, four times a year, to be a high yet reasonably foreseeable yearly exposure. The increased risk of death from respiratory cancer induced by this yearly exposure is estimated at between 10 and 2,000 per million. For five years of exposure at these levels, the risk increases geometrically and is estimated at between 1,000 and 12,000 per million. Based on current information, the Commission estimates that the lower estimate of 10 per million is closer to the actual risk for a one year exposure. Nevertheless, in view of the seriousness of the injury and the cumulative effects of asbestos exposure, even this minimum figure represents an unacceptable risk. The Commission believes that reducing exposure to respirable free-form asbestos in the home represents a substantial decrease in risk to consumers, since, for many people, the major exposure to inhalable asbestos is in the home.

INDUSTRY RESOURCE CONSIDERATIONS

ASSESSMENT OF SUBSTITUTES

The elimination of asbestos from patching compounds would necessitate the use or development of substitutes which are similar to asbestos, or which impart similar qualities to the product. Several substitutes for asbestos in patching compounds are in current use. The primary economic concerns focus on the effect of substitutions on the utility derived from the product (mainly in terms of performance characteristics) and on the prices of patching compounds.

Asbestos possesses a unique combination of strength, pliability, and heat-cold-, and moisture-resistant qualities; substitutes which have been tested in these product categories often do not last as long, are less workable, and may take a long time to perfect (asbestos-free spackling compounds were at least five years in development). Some products not readily reformulable may be dropped from the market. Availability of substitutes may also be limited temporarily on a regional basis, depending on the paint and building materials industries' ability to reformulate asbestos-containing products. Many producers are, however, either presently marketing asbestos-free materials or expect to in the near future.

Substitution may also lead to higher costs of production and prices for some of these products. The total cost to most patching compound manufacturers of chemically reformulating products is not expected to be large relative to sales; it is, however, expected that some cost increases will occur which will likely be passed on in the form of higher prices (this may be 10 to 15 percent). (Preliminary Economic draft study—subsection on Spackling/Joint Compounds, OSHA, (7).)

Inventories of existing products in distribution channels may vary over a wide range. Similarly, inventory turnover cycles at various points in distribution may vary considerably.

These conditions may be further affected by OSHA's course of action on asbestos. Should a commercial-industrial fiber limit standard be imposed, the industry would probably eliminate asbestos from paints and other building materials as well as from patching compounds.

ENVIRONMENTAL ISSUES

The Commission has studied the environmental effects of this proposal as required by the National Environmental Policy Act. An environmental assessment is on file at the Office of the Secretary of the Commission and indicates, by negative declaration, that no significant effects on the environment are foreseen by the proposals issued below.

Asbestos is an ubiquitous mineral fiber that has been used for many years in the U.S. in occupational settings and in building construction. This has led to low-level, but widespread exposure of the public. Asbestos is found in the air, water, and land (in minute concentrations relative to those found in or near asbestos mines or processing facilities).

The elimination of asbestos from patching compounds available to or used or enjoyed by consumers will significantly reduce household fiber release from mixing, sanding, and clean-up. It will not, however, significantly reduce fiber

[1] *United States of America* v. *The Anaconda Co.*, et al., Misc. No. 77-0024 (D.D.C.), June 13, 1977. *Kaiser Aluminum & Chemical Corp.* v. *CPSC*, Civ. No. 76-44 (D.Dela.) March 11, 1977.

release or fiber in the general environment from all sources.

Proper disposal of present inventories is also expected to pose no significant problems since it would account for a minor portion of all asbestos disposal.

The potential environmental (i.e., health) effects of the use of substitutes is, however, an issue which merits further study by the Commission and other agencies. No conclusions about the safety of the known substitutes have yet been made. Although the Commission has no evidence that the known substitutes are hazardous, there appears to be some concern in the industry on this point. Laboratory testing may be desirable to verify this point.

The Commission requests comment on other environmental issues as well as those raised here.

EFFECTIVE DATE

The Commission has assessed the possible effects on the relevant industries of banning consumer patching compounds. Staff research indicates that asbestos-free products can probably be in distribution in about six months. The Commission also considered the possible increased hazard to consumers that might result from banning the distribution of patching compounds 30, 180, and 360 days after publication of a final banning rule. The possible increased hazard to consumers that could arise during these different time periods was considered in the context of the assessment that asbestos from patching compounds poses a significant household fiber exposure risk to consumers using or enjoying patching compounds in their homes, although it may not pose a significant environmental fiber exposure hazard. On this basis, the Commission proposes that the manufacture, sale, offering for sale, importation and distribution in commerce of consumer patching compounds be prohibited 30 days after publication by the Commission of a final banning rule. This prohibition would apply to products in inventory as well as to those manufactured after the effective date of the final regulation.

PART C. ARTIFICIAL EMBERIZING MATERIALS (ASH AND EMBERS) CONTAINING RESPIRABLE FREE FORM ASBESTOS

Artificial emberizing materials for fireplaces are generally packaged in "emberizing" kits. The emberizing material is placed under artificial logs in gas-burning fireplace systems or in artificial fireplaces for decorative purposes. The product is also glued to artificial logs, either at a factory, or by a consumer using an emberizing kit. When subjected to high temperatures, the asbestos in this product produces a glow like real embers and ash. Asbestos fibers are released when the emberizing material containing asbestos is sprinkled on the fireplace floor, when glue used by the consumer to attach the material to an artificial log melts at high temperatures, and when ordinary household air currents and downdrafts cause the asbestos in the simulated embers and ash to become airborne. (Not included in this ban are synthetic logs, generally manufactured of cellulosic products and wax, which actually are ignited and consumed by the flames.)

EVALUATION OF THE RISK

Measurements are not available of the amounts of asbestos in the air from asbestos-containing emberizing materials in homes. However, it appears that the amount of airborne asbestos in such homes would increase when air currents in the home are created by downdrafts from a fireplace chimney or other activities that stir air in any room. Since emberizing materials may contain up to 50 percent asbestos, which if not permanently bound into artificial fireplace logs would be in respirable form, the risk associated with emberizing materials is considerable since it continues to exist 24 hours a day.

INDUSTRY RESOURCE CONSIDERATIONS

ASSESSMENT OF SUBSTITUTES

The elimination of asbestos from emberizing material may result in the use of substitutes which are similar to asbestos, or which impart similar qualities to the product. Virtually all of the manufacturers have developed asbestos-free emberizing material as of June, 1977. There are at least three substitutes for asbestos currently being used in artificial emberizing material: fibrous glass, vermiculite and a synthetic fiber with asbestos-like heat-resistant qualities.

It appears that the synthetic-fiber mixture is substantially more costly than the other mixtures, including those containing asbestos. The other two substitute mixtures may be somewhat more costly to produce, depending on local raw material availability, prevailing local prices, etc. The vermiculite-only embers may not be as effective in creating the desired "glowing" look; more of the material may be required to achieve the same degree of effect provided by the asbestos-containing mixture. It is doubtful that the price of emberizing kits will be significantly affected unless a large shift to the use of synthetic-fiber-containing-material occurs.

ENVIRONMENTAL ISSUES

The Commission has assessed the environmental effects of this proposal as required by the National Environmental Policy Act. Its assessment is on file at the Office of the Secretary of the Commission and indicates, by negative declaration, that no significant effects on the environment are foreseen by the proposals issued below.

As noted in Part B, asbestos is a ubiquitous mineral fiber that has been used for many years in the U.S. in occupational settings and in building construction. This has led to low-level, but widespread, exposure of the public. Asbestos is found in the air, water, and land (in minute concentrations relative to those found in or near asbestos mines or processing facilities). The elimination of asbestos from emberizing kits is not expected to reduce free fiber emissions significantly, either nationally or regionally (most of the manufacturers are located in California). A significant portion of household fiber release is accounted for by this product, however, in homes so equipped. The Commission will issue guidelines to minimize consumer exposure to floating fibers during a cleanup and disposal of embers. Significant effects are not expected from the ban itself other than increased safety in individual homes.

The potential environmental (i.e., health) effects of the use of substitutes is, however, an issue which merits further study by the Commission and other agencies. There is little information concerning the safety of the ember material substitutes. Further study is currently under way to collect information about these substitutes and to assess the potential health effects of their use. (Fibrous glass and the synthetic fiber are similar in shape and size to chrysotile, for example).

The Commission requests comment on other environmental issues as well as those raised here.

EFFECTIVE DATE

The Commission has assessed the possible effects on the relevant industries of banning artificial fireplace embers containing free asbestos. It appears that many manufacturers have ceased shipment of asbestos-containing merchandise. The Commission has also considered the possible increased hazard that might result from banning the distribution of this product, 30, 180, and 360 days after publication of a final banning rule. The continuing availability of respirable free-form asbestos to consumers during these differing time periods and the necessity for developing and transmitting to the public information on environmentally safe means of removing the product from consumers' homes was also reviewed. Based on these considerations, the Commission proposes that the manufacture, sale, offering for sale, importation and distribution in commerce of artificial fireplace emberizing material (embers and ash) containing respirable free-form asbestos be prohibited on the day of publication by the Commission of a final banning rule. This prohibition would apply to products in inventory as well as to those manufactured after the effective date of the final regulation.

PART D. UNREASONABLE RISK OF INJURY AND FEASIBILITY OF STANDARDS

The Commission finds that these products are being and will be distributed in commerce. The Commission has considered all the information currently available to it on the risks of injury concerning respirable free-form asbestos in the products discussed above including the frequency and severity of injuries and the nature of the risks associated with these products. The Commission preliminarily determines that the presence of respirable free-form asbestos in consumer patching compounds and in artificial emberizing materials (embers

and ash) for fireplaces presents an unreasonable risk of injury to the public from lung cancer and mesothelioma and that no feasible standard under the CPSA can adequately protect the public from such risk.

The Commission stated in a recently issued consumer product safety rule banning unstable refuse bins (42 FR 30296, June 13, 1977), in discussing the lack of feasibility of a standard, that, "The Commission is not required to look at the entire class of products of which a particular hazardous product is a member. Thus, when the Commission can identify the particular products that present the unreasonable risk of injury by specifying their characteristics in certain performance or design terms, the Commission can ban these articles." With respect to the products now under consideration, the characteristic identified is the presence of respirable free-form asbestos.

The Commission believes that not all patching compounds present an unreasonable risk of injury to the public, only patching compounds containing respirable free-form asbestos. The hazard associated with this product is the free form in which the asbestos appears. While a safe patching compound can be manufactured, it is not possible to manufacture a safe patching compound containing respirable free-form asbestos because a safe level of exposure to free-form asbestos in unknown. Therefore, it does not appear that a standard for patching compounds containing respirable free-form asbestos is feasible at this time.

The product, artificial emberizing materials for fireplaces, containing respirable free-form asbestos, is used only in dry form. Thus, individual asbestos fibers are never bound together. If the asbestos fibers were coated by another material to bind the fibers, it would no longer be the same product. In considering the dry character of the product and the fact that a safe level of exposure to respirable free-form asbestos is not known, it does not appear that a standard for artificial emberizing materials containing respirable free-form asbestos is feasible at this time.

The Commission believes that no standard can render the defined products non-hazardous and concludes that only banning these products can adequately protect the public from unreasonable risks of injury associated with them.

References

The parenthetical numbers used in the preamble above refer to the following documents:

1. Anderson, H. A., Lilis, R., Daum, S. Fischbein, A. S. and Selikoff, I. J.: Household-Contact Asbestos Neoplastic Risk. Ann. N.Y. Acad. Sci. 271:311-323 (1976).

2. Asbestos Information Assoc.: Information from Representative of the Asbestos International Association Conference, Hamburg, Germany, 1976, June 27, 1977 memo.

3. Borrow, M., Conston, A., Livornese, L. J., and Schlet, N.: Mesothelioma and Its Association With Asbestos. JAMA (8): 93-97 (1967).

4. *Canada*. Consumer & Corporate Affairs, Consumer Standards Directorate, Product Safety Branch. Asbestos In Toys and Modelling Materials Issue No. 2, June, 1976.

5. Department of Labor. Occupational Safety and Health Administration: Asbestos Dust Standard. 29 CFR 1910.93a.

6. Department of Labor. Occupational Safety and Health Administration: Occupational Exposure to Asbestos. Notice of Proposed Rulemaking. FR Vol. 40, No. 197, pp. 47652-47665, (Oct. 9, 1975).

7. Department of Labor. Occupational Safety and Health Administration: Asbestos Dust in the Construction Industry. Preliminary Draft: Technical. Feasibility Assessment. Spackling and Drywall Joint Compounds, p. 1-12 (1977).

8. Edge, J. R.: Asbestos Related Disease in Barrow-In-Furness Env. Res. 11:244-247 (1976).

9. Elmes, P. C. and Simpson, M. J. C.: Insulation Workers in Belfast 2. Mortality 1940-66. Br.J. Ind. Med. 28: 226-236 (1971).

10. *England*. Health & Safety Exec. Dept. of Prices and Consumer Protection. Asbestos Labeling Scheme, April 1976.

11. Enterline P., and Henderson, V.: A model for Extrapolating to Low Levels of Asbestos Exposure. Presented at Conference on Problems of Extrapolating the Results of Laboratory Animal Data to Man and Extrapolating the Results from High Dose Level Experiments to Low Dose Level Exposure Pinehurst, N.C. (March 1976).

12. Enterline, P., DeCoufle, P., and Henderson, V.: Mortality in Relation to Occupational Exposure in the Asbestos Industry. J. of Occupational Medicine 14 (12): 897-903 (1972).

13. Entricknap, J. B., and Smither, W. J.: Peritonal Tumours in Asbestosis, Brit. J. Ind. Med. 21:30-31 (1964).

14. Environmental Defense Fund: Petition for Action under section 13 of the CPSA against fireplace ashes and Logs Containing Asbestos. Footnote 1. May 12, 1977.

15. Fletcher, D.C.: A Mortality Study of Shipyard Workers and Pleural Plaques. Br. J. Ind. Med. 29:142-143 (1972).

16. Greenberg, M., and Davies, A. L., Mesothelioma Register 1967-8, Br. J. Ind. Med. 31:91-104 (1974).

17. Hammond, E. C., and Selikoff, I. J. & Churg, J.: Neoplasia Among Insulation Workers in the United States with Special Reference to Intra Abdominal Neoplasia. Ann. N.Y. Acad. Sci. 132:519-525 (1965).

18. Hammond, E. C., and Selikoff, I. J.: Relation of Cigarette Smoking to Risk of Death of Asbestos-Associated Disease Among Insulation Workers in the United States. pp. 312-317 International Agency for Research on Cancer (1973).

19. Harries, P. G.: Asbestos Hazard in Naval Dockyards. Ann. Occup. Hyg. 11:134-145 (1968).

20. Hasan, Fayal M. et al: The Significance of Asbestos Exposure in the Diagnosis of Mesothelioma: A 28-year Experience from a Major Urban Hospital. Amer. Rev. Resp. Dis. 115: 761-768 (1977).

21. Huff, J. E., Hammons, A. S., Dinger, C. A., Whitfield, R. L., and Ulrickson, G. U.: Asbestos: An overview. Env. Chemicals-Human and Animal Health 3rd Annual Conference Proceedings.

22. IARC Working Group on the Evaluation of the Carcinogenic Risk of Chemicals to Man. IARC Monographs on the Evaluation of the Carcinogenic Risk to Man: Asbestos. Intl Agency for Research on Cancer. 1977.

23. Interagency Collaborative Group on Environmental Carcinogens, 19th Meeting, NIH. Aug. 14, 1975.

24. Jones, H. B., and Grindon, A.: Environmental Factors in the Origin of Cancer and Estimation of the Possible Hazard to Man. Fd. Cosmet. Toxicol. 13:251-258 (1975).

25. Lillington, G. A. et al: Conjugal Malignant Mesothelioma. New Eng. J. Med. 291 (11): 553-554 (Sept. 12, 1974).

26. McDonald, J. C., McDonald, A. D., Gibbs, A. W., et al: The Health of Chrysotile Asbestos Mine and Mill Workers of Quebec. Arch. Env. Health 28:61 (1974).

27. McEwen, J., Finlayson, A., Mair, A., and Gibson, A.A.M.: Mesothelioma in Scotland, Br. Med. J. 4:574-576 (1970).

28. Mareweather, E. R. A., and Price, C. W.: Report on the Effects of Asbestos Dust on the Lungs and Dust Suppression in Asbestos Industry. H. M. Stationery Office, London (1930).

29. National Institute for Occupational Safety & Health: Criteria for a Recommended Standard . . . Occupational Exposure to Asbestos. (1972).

30. Newhouse, M. L., and Berry, G.: The Risk of Developing Mesothelial Among Workers in an Asbestos Textile Factory. XVII International Congress on Occupational Health, Bristol, England (1975).

31. Newhouse, M. L., and Thompson, H.: Mesotheliome of Pleura and Peritoneum Following Exposure to Asbestos in the London Area. Brit. J. Ind. Med. 22:261 (1965).

32. Newhouse, M.: Asbestos in the Work Place and the Community. Ann Occ. Hyg. 16:97-107 (1973).

33. Newhouse, M. L., and Berry, G., Predictions of Mortality from Mesothelial Tumours in Asbestos Factory Workers. Br. J. Ind. Med. 33:147-151 (1976).

34. Newhouse, M. L., and Berry, G.: Asbestos and Laryngeal Carcinoma Lancet. 2: 615 (1976).

35. Nicholson, W. J.: Case Study 1: Asbestos-The TLV Approach. N.Y. Acad. Sci. 271: 152-169 (1976).

36. Rohl, A. N., et al: Exposure to Asbestos in the Use of Consumer Spackling, Patching and Taping Compounds. Science 189:551-553 (Aug. 15, 1975).

37. Selikoff, I. J.: Asbestos and Neoplasia. Am. J. Med. 42(4): 487-496 (1967).

38. Selikoff, I. J., and Hammond, E. C. III Community Effects of Non Occupational Environmental Asbestos Exposure, Am. J. Pub. Health 58(9):1658-1660 (1968).

39. Selikoff, I. J., Churg, J., and Hammond, E. Co.: The Occurrence of Asbestosis Among Insulation Workers in the United States. N.Y. Acad. of Sci. 132: 139-155 (1965).

40. Selikoff, I. J., Hammond, E. C., and Churg, J.: Asbestos Exposure, Smoking, and Neoplasia. JAMA 204(2):106-112 (1968).

41. Selikoff, I. J., Hammond, E.C., and Seidman, H.: Cancer Risk of Insulation Workers in the United States. pp. 209-216 International Agency for Research on Cancer (1973).

42. Selikoff, I. J. Hammond, E. C. and Churg, J.: Carcinogenicity of Amosite Asbestos. Arch. Env. Health 25:183-188 (1972).

43. Selikoff, I. J., Nicholson, W. J. and Langer, A. M. Asbestos Air Pollution: Arch. Environ. Health, 25:1-13, July 1972.

44. Sheers, G.: Effets of Asbestos in Dockyard Workers. Br. Med. J. 3:574-579 (1968).

45. Stell, P. M., and McGill, T.: Asbestos and Laryngeal Carcinoma. Lancet 2:416-417 (1973).

46. Stumphius, J.: Epidemiology of Mesothelioma on Walcheren Island. Br.J.Ind. Med. 28:59-66 (1971).

47. Wagner, J. C., Sleggs, C. A., and Marchand, P.: Diffuse Pleural Mesotheliomas and Asbestos Exposure in the North Western Cape Province. Brit. J.Ind.Med. 17:260-271 (1960).

48. Wagner, J. C., et al: The Effects of the Inhalation of Asbestos in Rats. Br.d.Cancer, 29: 252-269 (1974).

49. Webster, I.: Asbestos and Malignancy. S.A.Med.J. 47:165-171 (1963).