



JUDGE MARK DAVIDSON
301 FANNIN, ROOM 211
HOUSTON, TEXAS 77002

June 30, 2005

F I L E D
CHARLES BACARISSE
District Clerk
10:00
JUN 29 2005

Harris County, Texas
By SEBASTIAN Deputy

Re: Cause No. 2004-03964; *In Re Asbestos Litigation*; Multi District Litigation

Dear Counsel:

Life is like baseball. Sometimes so are litigation and the law. After almost three weeks of evidence and thousands of pages of exhibits, I will resort to a series of baseball analogies to decide the Motion to Exclude Evidence that Chrysotile Asbestos Fibers are a Cause of Mesothelioma.¹

What is the Strike Zone?

The Defendants have filed a motion to strike evidence of chrysotile fibers as being a cause of mesothelioma. Georgia Pacific's product, they allege, but have quite properly not offered evidence to prove, contains only pure chrysotile asbestos. Thus, they argue, the Plaintiffs must present scientific proof and epidemiological evidence to establish within *Havner* and *Robinson* standards that pure chrysotile asbestos causes mesothelioma. No other evidence, they claim, is admissible to support a cause of action. They then claim that there are no epidemiological studies that were limited to provably pure chrysotile. Thus, they argue, the Motion must be granted.

The Plaintiffs take a differing view of the strike zone. Their preferred case, broadly stated, is that 1) chrysotile is asbestos; 2) asbestos causes mesothelioma; and therefore 3) chrysotile asbestos causes mesothelioma. They have historically presented epidemiological studies that show, among other things, that asbestos products that contain chrysotile asbestos have caused mesothelioma and are sure they have proved all they need to prove.

If the baseball equivalent of either of these strike zones was to be adopted, there would either be no hits (if the Plaintiff's theory is accepted), because anything within six feet of the plate would be a strike, or a never-ending series of walks (if the Defendant's

¹ In using the baseball analogy, I am honoring the spirit of this year's Texas Supreme Court opinion *In re U.S. Silica*, 157 S.W.3d 434 (Tex. 2005). That opinion, released the week of this year's Super Bowl, was laced with analogies to football.

theory is accepted), because no pitcher could possibly throw a strike. I believe that a fair reading of *Robinson and Havner*² only requires scientific probability as applied in peer-reviewed mainstream science through accepted methodology be used to prove causation. Specifically, I decline to rule inadmissible any testimony or studies that deal with products that are predominantly or overwhelmingly made from chrysotile asbestos, but that contain small amounts of other fibers.

Ground Rules

Every baseball field has a set of ground rules that is unique to the park. Foul poles, home run lines, and ground rule doubles can lead to different interpretations of the rules in each stadium in which baseball is played. I was surprised to learn that *Robinson* hearings apparently have a set of evidentiary rules all their own – everything comes in.

Early in the hearing, the Plaintiffs offered a 70 page, single spaced affidavit from Dr. David Egilman. There was a hearsay objection, of course, which I sustained. I was then made aware of interpretations of Rule 104(a) of the Rules of Evidence which allow a judge to decide matters relating to the admissibility of evidence as a matter of law. The case of *Piro v. Sarofim*, 80 S.W.3d 717 (Tex. App. – Houston [1st] 2002), was cited to me to allow, or require, affidavits, treatises, textbooks, and other documents that would never be allowed into evidence without a predicate not offered in this hearing. The record reflects that I reluctantly acceded to the law. As a result, not only did affidavits come in, but so did Emails solicited by lawyers in the case, private conversations between authors of treatises and witnesses and, in one case, a non-verbal communication between an author of a treatise and a witness, from which I was asked to infer improper motives by the witness.

I am not particularly happy with the record in this case, but I must admit it allowed me to consider everything that anyone had to say about the subject of the hearing. I am hopeful that at some point, the Supreme Court will clarify the evidentiary standards by which these hearings should take place.

Rules of the Game

I am not unaware of the importance of this ruling. The purpose of the establishment of the Multi-District Litigation court was to prevent widely different rulings on identical factual records. By doing so, as I understand, it was hoped that asbestos litigation would avoid abominations similar to the American League's (but not the National League's) adoption of the Designated Hitter Rule in 1973. Hence, I am giving far more analysis and revealing more of my reasoning for this ruling than I would in a non-MDL case, so that appellate review is possible and so that all counsel in all cases will know my inclinations on similar motions that may be brought in the future.

² The cases are *E.I duPont de Nemours & Co. v. Robinson*, 923 S.W.2d 549 (Tex. 1995) and *Merrell Dow Pharmaceuticals v. Havner*, 953 S.W.2d 706 (Tex. 1997). I am calling them the *Robinson* and *Havner* cases rather than the du Pont and Merrell Dow cases only because that has become the parlance and because no one would know what cases I was talking about.

While there is some doubt as to what the periphery of the law is, the basic rules on the admissibility and sufficiency of expert testimony are not in doubt. The *Robinson* and *Havner* cases, and their progeny, set out the law with reasonable certainty. While the Defendants in this case filed the motion, the burden of proof is on the Plaintiff to show that a person with proper qualifications gives testimony that is both relevant and reliable. An element of reliability is establishing that the expert testimony is based on sound scientific methodology and proper research. *Robinson* at p. 558. The same opinion gives several non-exclusive criteria trial judges are urged to consider:

- 1) The extent to which the theory has been or can be tested;
- 2) The extent to which the technique relies on the subjective interpretation of the expert;
- 3) Whether the theory has been subjected to peer review and/or publication;
- 4) The technique's potential rate of error;
- 5) Whether the underlying theory or technique has been generally accepted as valid by the relevant scientific community; and
- 6) The non-judicial uses which have been made of the theory or technique. See *Robinson* at p. 557.

In cases such as asbestos litigation where epidemiological evidence is offered to establish general causation, *Havner* gives additional guidance on the elements of a prima facie case. *Havner's* discussion of causation starts with the observation that not all limb reduction birth defects are caused by Bendectin and that Bendectin does not always cause the birth defect in question. Hence, the court reasoned, no direct evidence existed to prove general causation, or whether the substance was capable of causing a particular injury in the general population. In such a case, the court reasoned, proof that exposure to a substance demonstrably increases the risk of injury is sufficient to allow a finder of fact to infer that an injury was caused by a substance. This court has previously ruled that epidemiological evidence is not a prerequisite to a prima facie case in a mass tort, but may be a substitute for direct evidence of general causation.³ Where it is offered, it must comply with the requirements of the *Havner* opinion.⁴

It was not the burden of the Plaintiffs to prove causation at the hearing just concluded, of course. It was their burden to show that generally accepted scientific principles exist in support of their theory of general causation, and that those theories are based on sound methodology. The trial court is not a finder of that ultimate fact, but rather a gatekeeper. I have limited the Court's role in this hearing to that function, and none other. I received Defendants' testimony in this case over Plaintiffs' objection not to weigh the evidence in the role of a traditional finder of fact, but rather to allow the Defendants to criticize either the Plaintiffs' experts' methodology, credentials, or other relevant criteria. Their testimony was received and considered for that limited purpose.

³ See my letter of January 20, 2005 on Chrysler's Motion to Strike. I acknowledge I used the word "specific" instead of "direct and general" in that letter.

⁴ I acknowledge that Chrysler has filed a motion seeking a Writ of Mandamus challenging the friction products ruling. Should a writ be conditionally granted by a reviewing court, I will issue a new ruling in this case consistent with such a ruling.

Leading Off

The parties are in agreement that asbestos can cause disease. Defendants' motion does not attempt to deny, and the Defendants' experts have agreed, that all kinds of asbestos, including chrysotile, can cause asbestosis and lung cancer. They also agree that amphibole asbestos (crocidolite, tremolite, and amosite) can cause mesothelioma. The dispute here is whether non-amphibole asbestos, or chrysotile, can cause mesothelioma.

There is also no doubt that chrysotile is a different form of asbestos. Its fibers are shorter, more flexible and more serpentine in shape. The Defendants claim, and peer-reviewed published material exists, stating that because chrysotile is shorter, it is naturally expelled from the body more quickly and easily than amphibole asbestos. There is little question, although it is not accepted by all of Plaintiffs' published authors, that amphibole asbestos fibers are more potent as a carcinogen and as a mesotheliogen than chrysotile. The chemical composition of chrysotile asbestos is different as well. Those facts are not dispositive of the motion before the court, since the vast majority (95% was a figure used throughout the hearing) of asbestos fibers mined and placed into the United States market during the 20th century were chrysotile. In other words, the greater toxicity of amphibole fibers are offset, at least in part, by the greater number of chrysotile fibers to which the public was exposed.

One Inning Game?

All witnesses for all parties acknowledge that there is mainstream support within the scientific community for the causation theories of both the Plaintiffs and Defendants. The Plaintiffs made motions for summary disposition of the motion before the court at the close of Dr. Craighead's testimony and at the close of their case. Their argument was and remains that if there is acceptance of a scientific theory among a sizeable portion of the scientific community, they are entitled to put on their evidence to a jury without any further preliminary hearing by this court. That position is seductive, and would make this court's decision easier. However, it overlooks the fact that general acceptance in the scientific community is but one factor set out in *Robinson*. The focus is on more than the opinions themselves, but on the methodology of those opinions, and whether the methodology is in the scientific mainstream. The Defendants' argument, on the other hand, fails to state how or why a position can be accepted as valid by substantial parts of the scientific community and not be in accord with the other *Robinson* factors. I can imagine cases where a judge would find the scientific opinions generally accepted by a substantial part of the scientific community to be without foundation, but in my view a trial court should make such a finding with great care. Therefore, I proceed to consider the methodology and basis for the opinions offered by the Plaintiffs' witnesses.

Four Inning Game

Both sides called separate witnesses on epidemiology, pathology, and public health. In addition, the Plaintiffs called two cell biologists.⁵ Other than challenges based on pecuniary bias, there were few challenges to the qualifications of any witness. Let me reiterate that my review of the Defendant's witnesses was focused on their criticisms of the methodology of the Plaintiffs' science.

First Inning - Epidemiology

In reviewing the epidemiological evidence, it cannot be denied that there are studies in peer-reviewed publications that show an increased risk of mesothelioma that exceeds *Havner* standards. There are also peer-reviewed studies in others that show no increased risk of mesothelioma. It is agreed that mesothelioma is an extremely rare disease that seldom, if ever, develops in the total absence of asbestos in the environment.⁶

The Plaintiff's epidemiologist was Dr. Richard Lemen. I found his testimony to be credible and consistent. He presented studies and a summary of those studies. The Plaintiffs' lead studies are:

Yano – In a cohort of 515 workers in a chrysotile asbestos mine reported to contain pure chrysotile, there were two reported cases of mesothelioma. This is far more cases than would be expected, and is some evidence of an increased risk that exceeds the “double probability” standard of *Havner*. The Defendants' primary response is that a later study by Tossavainen showed that mines in that same area of China contained tremolite, which is an amphibole asbestos fiber known to cause mesothelioma. I reject the Defendants' claim that the presence of tremolite in some mines, and not necessarily the same mines in the region, constitute a confounding factor that destroys the scientific value of the Yano study. I accept the methodology of the Yano study as scientifically sound.

Piolatto and Silvestri – In a study of 1094 chrysotile production workers, there were between three and five mesothelioma deaths.⁷ This is, once again, more cases than would be expected, and is some evidence of an increased risk that meets *Havner* standards. The Defendants' attack on the methodology is that the mines in question were compromised with balangeroite. The Defendants' claim that the presence of balangeroite requires the Plaintiffs to prove that the balangeroite was not the cause of any of the deaths. The Defendants make no claim, however, that balangeroite can be the cause of mesothelioma, or any other form of lung disease. Without some proof that balangeroite can be a cause, I cannot shift the burden of proving a negative to the Plaintiffs. I acknowledge

⁵ In the future, if similar hearings take place, I would encourage the parties to allow witnesses from alternating sides within the same field in succession. It would make my job easier to hear from all persons within the same discipline before moving on to the next for purpose of keeping the issues better organized.

⁶ “An asbestos free environment” is almost an impossibility in today's world. I make no claim that one exists outside a laboratory.

⁷ One of the deaths was reported to be “probably” caused by chrysotile-induced mesothelioma, and the other was listed as “possible.” Whether it is three, four or five deaths, it is still far in excess of the “background” rate of the disease.

the language from *Havner* that states that when "other plausible causes of the injury or condition that could be negated, the plaintiff must offer evidence excluding those causes with reasonable certainty." *Havner* at p.720. In this case, however, the Defendants have given the Plaintiffs nothing to negate. They make no claim and present no evidence that it is a plausible cause, and therefore there is no obligation for Plaintiffs to exclude it. I accept the methodology of the Italian studies as scientifically sound.

Cullen – In a study of 54 chrysotile mine workers with lung diseases, there were two cases of mesothelioma. While this is not a study that compares the workers with members of the public who were not exposed to asbestos, it still shows rates of mesothelioma in excess of those of the public who were not exposed. The Defendants' response is that the mine in question contained anthophyllite, an amphibole fiber. The Plaintiffs' response, as contained within the Cullen study itself, is that anthophyllite is the weakest carcinogen of all asbestos types, including chrysotile. Defendants did not respond to this. I conclude that the Cullen study, while not perfect in many respects, is sufficiently sound to be given some weight.

Other studies – The Plaintiffs' epidemiological witness, Dr. Richard Lemen, offered a review of other studies in which he analyzed data from studies from Quebec and the Soviet Union. Again, while the underlying data is not free from question, I am convinced Lemen used sound scientific basis for his calculations.

Defendant's Epidemiological Response – The Defendants' response was presented by Dr. Timothy Lash. I found him to be highly qualified and equally credible. He largely relied on the report submitted to the Environmental Protection Agency by Berman and Crump ("B&C"). He found the meta-analysis contained in B&C credible and scientifically based. B&C has not been published or formally accepted by the EPA, but it does perform a valuable study of the field. If the question before me was whether B&C is more credible than the Plaintiffs' studies taken together, my decision might well be different. While B&C makes some mention of the Plaintiffs' reports, it mostly advocates acceptance of other reports, and makes assumptions that preclude consideration of the reports relied on by Dr. Lemen. While Dr. Lash offered criticism of the Plaintiffs' studies, I have dealt with most of his comments above.

In summary, I find the Plaintiffs have made a valid epidemiological case.

Second Inning - Pathology

Both parties presented pathologists' testimony to support their claims.

The Plaintiffs' called Dr. Samuel Hammar. He practices in an area of the nation that has many more mesothelioma cases than would be expected. He has also authored

textbooks and published peer-reviewed articles on the subjects of his testimony. I found him qualified and credible.

He has performed and published studies on the link between asbestos and mesothelioma in both the laboratory and in animals, in addition to his examination of autopsies and biopsies on humans. Both sides agree that his studies on rats show an increase in mesothelioma after injection of chrysotile asbestos. Both sides agree that no similar study on hamsters or primates has achieved a similar result. Both sides elicited extensive testimony as to why this disparity of results exists. Because the methodology of those studies is not dispositive of the court's ruling on this motion, I decline to go into the specifics of my review of the science.

Havner was skeptical of the sufficiency of animal studies by themselves in the absence of similarity of dosage between what humans would be exposed to and the dosage given to animals. *Havner* at p. 729. If all the Plaintiffs could offer on causation was the rat studies, I would grant the Defendants' motion. I will allow those studies into evidence as some basis for a link between chrysotile and mesothelioma.

Dr. Hammar also testified about *in vitro* studies, or laboratory experiments that show a link between chrysotile and mesothelioma. *Havner* was similarly skeptical of *in vitro* studies, finding them "the beginning, not the end of the scientific inquiry and proves nothing about causation without other scientific evidence." Nonetheless, Dr. Hammar's testimony and graphic photograph of the formation of mesothelial cell growth persuade me that his theories and testimony are grounded in science, and I will allow them into evidence in future trials, although not as the sole scientific basis of causation.

I found most persuasive Dr. Hammar's testimony on autopsies performed on people who died of mesothelioma. The presence of chrysotile in samples of tissue found at or near tumors in the pleura is persuasive evidence of the issue before the court.

Defendants' expert, Dr. Richard Craighead, on the other hand, spoke as an advocate for the Defendants. He did not effectively criticize Dr. Hammar's methodology, but rather, his opinions. He testified both that Dr. Hammar is a qualified and pre-eminent expert in the pathology of asbestos-related disease and that reasonable scientists, using mainstream methodology, can come to a conclusion different from the one he took.

Nor did I find all of Dr. Craighead's testimony totally credible. Testimony from all other witnesses who testified on the subject and from B&C showed that chrysotile asbestos has a half-life shorter than that of amphibole asbestos. Any scientist should know that under a half-life analysis, the amount of active material never goes to zero. Here was Dr. Craighead's testimony on the subject:

But let's say a chrysotile particle – we know there are many, many tiny particles of chrysotile, they are taken up by the macrophages. The macrophages can go out the lymphatics. They can go up the muco-ciliary escalator system and they are essentially eliminated.

The proof of that is unquestionable. When you analyze the lungs of individuals who have been exposed to chrysotile, we see that initially there is chrysotile in the lungs, but after the passage of time, weeks or a few months at most, that chrysotile let's say that we breathe in today is gone. That has been shown in many analyses.

The testimony, if true, is inconsistent with chrysotile being in almost anyone's lung at the time of an autopsy. It is also inconsistent with most, if not all, published material on the subject. Without a doubt, one reason chrysotile fibers are less potent is that they are easier for the body to eliminate naturally, either through the mouth, nose or the lymphatic system. Not all gets eliminated, and Dr. Craighead made no response to the peer-reviewed theory that the smaller chrysotile fibers are better able to go through the lung to the pleura.

Third Inning – Public Health

Both sides also called expert witnesses to testify in the area of toxicology. Neither are full time toxicologists, but both have academic and professional credentials in the area.

Dr. Arthur Frank testified on behalf of the Plaintiffs. I found him to be more of an advocate than a witness here to help the court. Consider the following exchange:

Q (by the court) – Since we are on the subject of brakes, let me ask you to assume two things. One of which I have not found and will not do for a while. The second of which I have. Let me ask you to assume there is epidemiological testimony linking chrysotile to mesothelioma. That is the one I have not done. Let me ask you to assume there is no epidemiological link between brake repair and mesothelioma. Explain. Assume those two as a given, and as a scientist you understand what assumptions mean?

A – I do.

Q – Explain.

A - It's inexplicable.

Moments later, Mr. Kraus took the witness on redirect. The story changed, and changed quickly.

Q – All right, sir. With respect to the Judge's question about how it can be that there is no epidemiologic study of chrysotile exposed brake workers that demonstrates an excess of mesothelioma, and other studies suggest that chrysotile does cause the mesothelioma, I would like to discuss with you and amplify some of the logical explanation for the dichotomy between those two motions all right?

A – Yes, sir.

Q – Are there other explanation for those two assumptions epidemiologically and scientifically other than that chrysotile does not cause mesothelioma?

A – Are there other explanations for that dichotomy?

Q – Yes.

A – Yes.

Q – Let's discuss what some of those are. Is it important in determining whether chrysotile causes mesothelioma in brake workers that it can be demonstrated that your cohort of brake workers had adequate exposure to chrysotile asbestos?

A – Yes.

Q – If you have a cohort of people using chrysotile asbestos brakes who have not breather significant quantities of chrysotile dust in the course of that work is that a reason why a cohort of brake workers exposed to chrysotile brakes may not develop mesothelioma?

A – Yes. If you look at the wrong population even though they have had a small amount of exposure the rarity of the disease makes it difficult to show up in a small group or in a group with very short-term exposure.

Q – One, there may be no exposure in the cohort.

A – Correct.

My point in highlighting this testimony is to point out that on leading questions,⁸ Dr. Frank explained something that a few minutes before he had deemed inexplicable.

Dr. Laura Green was more consistent, but less qualified to give testimony. Her credibility was challenged by her belief that money paid to academics to produce learned treatises should not be disclosed, and by the fact that her one previously published treatise on the subject of asbestos “grew out of” expert witness work she had done for a party to asbestos litigation that was not disclosed in the treatise. Her testimony that “honest people don't disclose conflicts of interest” borders on the absurd.

Severely condensed, Dr. Green's testimony was that B&C was a mainstream, honest report and was entitled to great weight. I have no reason to doubt the honor of either Drs. Berman or Crump, but that is not a valid attack on the methodology of the Plaintiffs' witnesses or of the treatises on which they rely.

Fourth Inning – Cell Biology

The Plaintiffs called two cell biologists to the stand to testify: Dr. Arnold Brody and Dr. Ronald Dodson. Both appeared to be thoroughly credible, and all of their findings appeared to be based in proper scientific technique. Their opinions had been previously disclosed in peer-reviewed articles. If any attacks on their methodology were appropriate, I am sure they would have been made. Defendants did not bring a cell biologist to testify, and limited their attacks on the methodology to those made during cross-examination.

⁸ Wisely, the Defendants did not object to the leading questions. Dr. Franks's supine agreement to Mr. Kraus's questions did not enhance his credibility.

In addition to their own research, both cell biologists presented the court with published articles by, among other people, Suzuki, Rogers, Sebastien, Langer and Nolen. Not all studies dealt with the link between mesothelioma and pure chrysotile. Some studied exposures to mixed chrysotile environments that showed a substantially increased likelihood of mesothelioma in patients who were subjected to amphibole and chrysotile asbestos when compared to those who were subjected to only amphibole fibers. Further, both peer-reviewed lung tissue burden analyses and studies by the witnesses showed the presence of chrysotile in the pleura of persons with mesothelioma. The witnesses' methodology, therefore, consisted of examination of cancerous cells with an electron microscope, examination of nearby asbestos fibers, consideration of employment histories of the persons examined, and consideration of peer-reviewed materials. The methodology was sound.

The testimony of Drs. Brody and Dodson was credible, consistent, generally accepted in the scientific literature, and is sufficient evidence, even without epidemiological evidence discussed above, for proof of general causation.

The Defendants then tried the legal equivalent of a "suicide squeeze". It was agreed by all witnesses that science does not yet know exactly what it is about asbestos, or any other material, that starts the unlimited cell growth that leads to cancer. They argue that without that testimony, the methodology of the cell biologists is not scientifically valid. If that is the case with chrysotile asbestos, it is also the case with amphibole asbestos, cigarettes and all other known carcinogens. Should the Defendants (and all parties that joined them in this motion) prevail on the present motion, they may well be subject to judicial estoppel from claiming in any court in Texas, or perhaps nationally, that amphibole fibers cause mesothelioma. In any event, I reject the argument that the specific reason why a substance leads to cell growth is a legal prerequisite to a prima facie case.

A Shifting Strike Zone?

I am aware of the fact that last winter, I announced a ruling markedly different from this one. That motion, like this one, dealt with chrysotile asbestos products. That motion, like this one, dealt with mesothelioma. There the similarities stop. Unlike the friction product case, here there are epidemiological studies that support the Plaintiffs' theories. Additionally, in this hearing, there is un rebutted testimony from cell biologists. Different evidentiary records can and should lead to different rulings, even in cases with facial similarities.

Box Score – Final

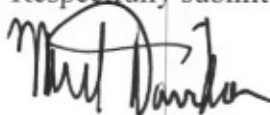
The motion to strike is denied.

I understand, of course, that science may, over time, prove or disprove the Plaintiffs' theories. I stand ready to examine the science again on the request of any

party who believes that further research will change the scientific analysis and methodology of the witnesses.

I will sign an order consistent with this ruling.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark Davidson". The signature is stylized with a large, looped initial "M" and a long, sweeping underline.

MARK DAVIDSON