

Revised May 20, 1999

**UNITED STATES COURT OF APPEALS
For the Fifth Circuit**

No. 97-60685

MIKE CURTIS, ET AL.,

Plaintiffs,

MICHAEL CRAFT; TROY LUSTER; BOB HARRIS; TERRY NEVELS; LARRY
OAKES,

Plaintiffs - Counter Defendants - Appellants,

CYNTHIA CRAFT; JEANETTE LUSTER; SHARI NEVELS,

Plaintiffs - Appellants,

VERSUS

M & S PETROLEUM, INC.; DONALD MULLINS,

Defendants - Counter Claimants - Appellees,

BARRETT REFINING CORPORATION; E.I. DUPONT DE NEMOURS AND COMPANY,
doing business as DuPont Speciality Chemicals,

Defendants - Appellees.

Appeal from the United States District Court
for the Southern District of Mississippi

May 13, 1999

Before DAVIS, SMITH, and WIENER, Circuit Judges.

W. EUGENE DAVIS, Circuit Judge:

In this toxic tort case, Plaintiffs, a number of refinery workers and their wives, allege that they were exposed to excessive amounts of benzene due to the intentional and negligent actions of Defendants and that this exposure caused numerous health problems.

The district court excluded the testimony of Plaintiffs' expert witness that was proffered to establish the causal link between Plaintiffs' health problems and exposure to excessive amounts of benzene. The court ruled that this testimony did not meet the requirements of *Daubert*.¹ The district court then granted judgment as a matter of law in favor of Defendants primarily because Plaintiffs failed to establish the necessary causal link between their exposure to benzene and their illnesses.

In this appeal, Plaintiffs challenge: (1) the district court's exclusion of Plaintiffs' expert witness on the issue of medical causation; (2) the district court's exclusion of the proffered testimony of Mississippi Department of Environmental Quality personnel; and (3) the district court's refusal to allow Plaintiffs to introduce evidence that Defendant Barrett Refining Corporation's corporate representative invoked his Fifth Amendment privilege at his deposition.

For the following reasons, we vacate the district court's dismissal of the refinery workers' suits and remand for trial. We affirm the dismissal of the suits of the refinery workers' wives.

I. Background

Defendant Barrett Refining Corporation ("BRC") owns a refinery located in Vicksburg, Mississippi. Plaintiffs Michael Craft, Troy Luster, Bob Harris, and Larry Oakes (the "refinery workers") were employed by BRC as workers at the refinery. The refinery had been

¹ *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993).

built in 1978 by Vicksburg Refinery, Inc. for the purpose of processing light sweet crude oil into naphtha (a light distillate used for gasoline manufacturing), diesel (a fuel oil for machinery), and residual oil products. BRC purchased the refinery in 1991 and, after making several structural changes to the refinery, began to process light sweet crude oil into jet fuel. BRC was successful in its operations but eventually had to shut down the refinery in the fall of 1994.

In April 1995, BRC entered into a three-year operating lease agreement with Defendants M&S Petroleum, Inc. ("M&S") and Donald Mullins, one of M&S's owners, under which M&S would lease and operate the refinery. Rather than continuing to process light sweet crude oil, however, M&S planned to process Heavy Aromatic Distillate ("HAD"), a product manufactured by Defendant E.I. DuPont De Nemours and Company ("DuPont"). M&S proposed to produce a gasoline blend stock and a marine diesel oil blend stock from HAD.

HAD, a co-product of DuPont's ethylene process, is composed of a number of toxic and hazardous chemicals, the most prevalent being benzene, which makes up 25-35 percent of HAD. Because of HAD's toxicity, particularly the benzene component, DuPont informed M&S by letter of May 1, 1995, that it would be "providing product stewardship support" before DuPont made any shipments of HAD to M&S. Attached to this letter was a summary of the OSHA benzene standard, 29 C.F.R. § 1910.1028, providing that the permissible level of exposure to benzene is one part of benzene per million parts of air (1 ppm) as an 8-hour time-weighted average. The

summary also provided instructions for exposure monitoring, employee notification, methods of compliance, respiratory protection, medical surveillance, and communications.

In compliance with this letter, DuPont dispatched Brad Kulesza, a Senior Technical Service Engineer, to the Vicksburg refinery on May 3, 1995. The purpose of the visit was to explain how to handle HAD safely, to review the OSHA benzene standard, to perform a quick walk-through of the HAD barge unloading and storage areas, and to answer any questions concerning HAD.

After his visit, Mr. Kulesza promptly wrote a letter to M&S reiterating the dangers of benzene and identifying six safety items that M&S would have to complete before DuPont would deliver HAD to the refinery. These items included providing benzene awareness training to the operators and mechanics responsible for unloading and processing HAD; developing procedures for unloading and processing HAD; providing safety showers and eyewash facilities at the barge unloading area; making available and using proper protective equipment; providing employee benzene exposure monitoring; and providing temporary or permanent benzene warning signs. Mr. Kulesza also stated in this letter that he would visit the refinery again in the future and follow up on his recommendations.

Mr. Kulesza did not indicate to M&S the proper permits it needed to process HAD nor did he inquire whether BRC or M&S had obtained these permits. At trial, however, Mr. Kulesza testified that during his visit to the refinery, he mentioned the need to

obtain the proper permits.

DuPont also wrote a letter dated May 23, 1995, to Mr. Mullins, providing safe handling literature for HAD, specifically DuPont's Material Safety Data Sheet ("MSDS") on HAD. The MSDS provided the components of HAD and the potential health effects due to exposure to HAD. It warned that skin contact with HAD could cause skin irritation with discomfort or rash and that inhalation could cause nausea, headache, weakness, loss of appetite, or temporary nervous system depression.² Mr. Mullins acknowledged in writing that he had received the safe handling literature and that he agreed to instruct his employees and any others who might handle HAD in the safe handling procedures. Upon receipt of Mr. Mullins' acknowledgment, and without further inspection of the refinery, DuPont began shipping HAD to the refinery.

M&S began processing HAD at the refinery in mid-June 1995 and immediately encountered serious problems. HAD caused the pump strainers to become clogged daily and caused leaks in the heat exchangers and in the fin fan. When the refinery workers attempted to fix these mechanical problems, they became soaked in HAD. Additionally, due to the clogging of the strainers and the leaks in the heat exchangers and the fin fan, HAD would collect in the American Petroleum Institute open air separator system, or oily water separator, the refinery's recovery system. Because HAD is lighter than water, HAD would sit on top of the water in the

² See *infra* note 6.

separator. On a daily basis, the refinery workers had to transfer HAD from the separator into a recovery tank. This process would take approximately one hour to complete, during which time the refinery workers were continuously exposed to HAD fumes that had a very distinct and strong odor.

Contemporaneously with the attempts to process HAD, the refinery workers began to experience headaches, nausea, dizziness, diarrhea, and a lack of energy. Plaintiffs Cynthia Craft and Jeanette Luster, the wives of Michael Craft and Troy Luster, respectively, also began to experience these same symptoms when exposed to their husbands' skin and clothes.

On July 4, 1995, Larry Oakes, one of the refinery workers, called BRC headquarters in Oklahoma and informed BRC Vice-President Paul Nicholson that the refinery workers were becoming ill and that HAD was destroying the refinery. Mr. Nicholson instructed Mr. Oakes to shut down the refinery and to send him a sample of HAD for analysis. However, John Barrett, the president of BRC, telephoned Mr. Oakes a week later and advised him to restart the refinery.

At the beginning of August 1995, M&S hired Plaintiff Terry Nevels³ to manage quality control and to act as safety manager at the refinery. Soon after beginning his employment at the refinery, Mr. Nevels began to experience diarrhea, disorientation, dizziness, and a lack of energy, the same symptoms as those of the other refinery workers. Plaintiff Shari Nevels, Mr. Nevels' wife, also

³ Mr. Nevels is hereinafter included in the term "refinery workers."

began to experience these symptoms when exposed to her husband's skin and work clothes. Mr. Nevels became concerned and consulted the MSDS provided by DuPont. Alarmed by the components of HAD, specifically benzene, Mr. Nevels began to conduct research on benzene and obtained the Code of Federal Regulations on the OSHA benzene standard, 29 C.F.R. § 1910.1028. He found that the symptoms he and the other refinery workers were experiencing were consistent with those of overexposure to benzene.⁴ Although Mr. Nevels showed the Code of Federal Regulations to Mr. Mullins, Mr. Mullins informed Mr. Nevels that the Code did not pertain to the refinery. In response to Mr. Nevels' concern over his and the others' symptoms, Mr. Mullins began purchasing milk, which he encouraged everyone at the refinery to drink in order to relieve their symptoms.

Mr. Nevels remained concerned about the symptoms that he and the other refinery workers were experiencing. Through his research, he concluded that he needed to perform air monitoring in the refinery. Mr. Nevels requested an order of Draeger tubes, pump devices used to monitor benzene levels in the air. The specific Draeger tubes ordered were only able to monitor a maximum of ten parts of benzene per million parts of air (10 ppm). The instructions for the Draeger tubes stated that the tubes needed to be pumped twenty times in order to get an accurate reading of the benzene in the air. However, when Mr. Nevels operated the Draeger

⁴ See *infra* note 7.

tubes in several areas of the refinery, after only two pumps, the tubes became saturated, registering the maximum reading of 10 ppm. Based upon the Draeger tube tests, Mr. Nevels concluded that the air in the refinery contained benzene of at least 10 ppm, exceeding the permissible exposure level of 1 ppm as provided in the MSDS and in the OSHA benzene standard.

Additionally, Mr. Nevels requested that blood tests be performed on the workers at the refinery. Mr. Mullins arranged for a qualified medical person from the Vicksburg Clinic to visit the refinery and to take blood samples from the workers. Mr. Nevels received the results of the blood tests, which proved to be normal.

In the meantime, the people in the Vicksburg community began to complain about the smell emanating from the refinery. In response, the Mississippi Department of Environmental Quality ("MDEQ") visited the refinery on Friday, September 29, 1995, and met with Mr. Nevels, Mr. Oakes, Mr. Craft, and Mr. Harris. At this time, the refinery was not in operation due to mechanical problems. On Monday, October 2, 1995, Mr. Mullins instructed that the refinery be restarted. The refinery workers refused to restart the refinery due to their concerns about processing HAD and walked off the job. They immediately consulted Dr. John Barnes, a family physician at the Street Clinic in Vicksburg, who performed additional blood tests. These blood tests also proved to be within normal limits.

In October 1995, Michael Craft, Troy Luster, Bob Harris, Larry Oakes, Terry Nevels, Cynthia Craft, Jeanette Luster, and Shari

Nevels filed suit in Mississippi state court against BRC, M&S, Donald Mullins, and DuPont, alleging that Defendants' intentional and negligent actions had caused them to become exposed to benzene, resulting in numerous health problems and emotional distress related to their fear of contracting cancer or other catastrophic diseases. The suit was removed to federal District Court approximately one year later. Following lengthy discovery, BRC filed a motion for summary judgment seeking dismissal under the exclusivity provision of the Mississippi Workers' Compensation Act. This motion was granted with respect to the claims of Michael Craft, Troy Luster, Bob Harris, and Larry Oakes, the employees of BRC.

Shortly before trial, Defendants moved to exclude the testimony of Plaintiffs' expert Dr. Frank Stevens. After conducting a hearing *in limine*, during which the district judge heard the proffered testimony of Dr. Stevens and that of the defense experts, Dr. William Rock and Dr. Robert Andrew Budinsky, the district judge excluded the testimony of Dr. Stevens.

In response to other motions by Defendants, the district judge ruled that Plaintiffs could not introduce the testimony of the MDEQ representative. The district court also ruled that it would not instruct the jury that it could draw an adverse inference from the BRC corporate representative's invocation of his Fifth Amendment privilege at his deposition.

The case was tried before a jury beginning in August 1997. At the close of Plaintiffs' case, Defendants moved for judgment as a

matter of law under Fed.R.Civ.P. 50(a). The district court granted the motion as to all Defendants, holding that Plaintiffs had failed to make out a prima facie case and that Defendant DuPont had violated no legal duty to Plaintiffs. This appeal followed.

II. Evidentiary Rulings

A. Standard of Review

We must first review the trial court's evidentiary rulings under an abuse of discretion standard. *General Electric Co. v. Joiner*, 522 U.S. 136, 118 S.Ct. 512, 139 L.Ed.2d 508 (1997). Then, with the record defined, we must review *de novo* the order granting judgment as a matter of law. *Allen v. Pennsylvania Engineering Corp.*, 102 F.3d 194, 196 (5th Cir. 1996) (citing *Christophersen v. Allied-Signal Corp.*, 939 F.2d 1106, 1109 (5th Cir. 1991) (en banc), cert. denied, 503 U.S. 912, 112 S.Ct. 1280, 117 L.Ed.2d 506 (1992)).

B. Admissibility of Dr. Frank Stevens's Testimony

We first address the district court's evidentiary ruling excluding Dr. Frank Stevens's expert testimony on medical causation. Plaintiffs sought to introduce the testimony of Dr. Stevens, an industrial hygienist. Dr. Stevens received his Ph.D. in Environmental Science in 1984 and has considerable experience in the areas of industrial hygiene, occupational safety and hazard, and toxicology. The district judge conducted a *Daubert* hearing outside of the presence of the jury wherein he heard the proffered testimony of Dr. Stevens concerning the medical causation between

Plaintiffs' exposure to benzene and the onset of their symptoms. His conclusion was that exposure to benzene caused the symptoms experienced by Plaintiffs and that this exposure subjected them to known long-term health problems. After reviewing Dr. Stevens's report and listening to the *in limine* testimony, the district court excluded Dr. Stevens's causation opinion on the grounds that it did not satisfy the requirements set forth in *Daubert*.

The admissibility of expert testimony is governed by Fed.R.Evid. 702, which provides:

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

The Supreme Court interpreted Rule 702 in *Daubert*. The Court explained that Rule 702 assigns to the district judge a gatekeeping role to ensure that scientific testimony is both reliable and relevant. *Daubert*, 509 U.S. at 597, 113 S.Ct. at 2799.⁵ This role requires the district judge to undertake a two-part analysis. The district judge must first determine whether the proffered testimony is reliable, requiring an assessment of whether the reasoning or methodology underlying the testimony is scientifically valid.

⁵ In *Kumho Tire Co. v. Carmichael*, ___ U.S. ___, 119 S.Ct. 1167, 1171 (1999), the Court held that Rule 702 and the *Daubert* principles extend beyond scientific testimony. *Kumho* does not affect the result here, because the instant case involves what is undeniably scientific evidence. Although *Kumho* was decided after briefing and argument in this case, we have taken it into account in our discussion of the *Daubert* factors.

Second, the district judge must determine whether that reasoning or methodology can be properly applied to the facts in issue; that is, whether it is relevant. *Id.* at 592-93, 113 S.Ct. at 2796.

The first part of the analysis concerns whether the challenged testimony is reliable. In order to be reliable, the subject of the testimony must be "scientific ... knowledge." *Id.* at 590, 113 S.Ct. at 2795. This requirement implies that the testimony must be grounded in the methods and procedures of science and must be more than unsupported speculation or subjective belief. *Id.* "[T]he party seeking to have the district court admit expert testimony must demonstrate that the expert's findings and conclusions are based on the scientific method, and therefore, are reliable." *Moore v. Ashland Chemical, Inc.*, 151 F.3d 269, 276 (5th Cir. 1998) (en banc). The Supreme Court set out four non-exclusive factors to aid in the determination of whether the methodology is reliable. They are:

- (1) whether the theory or technique has been tested;
- (2) whether the theory or technique has been subjected to peer review and publication;
- (3) the known or potential rate of error of the method used and the existence and maintenance of standards controlling the technique's operation;
- and (4) whether the theory or method has been generally accepted by the scientific community.

Daubert, 509 U.S. at 593-94, 113 S.Ct. at 2796-97.

In accord with the principles set forth above, Dr. Stevens provided generous support for his general causation theory that exposure to excessive levels of benzene will cause harm such as Plaintiffs experienced. At the *Daubert* hearing and in his report,

he recited several scientific studies in support of this premise. Dr. Stevens stated that he relied on the MSDS provided by DuPont⁶ and the OSHA standard on benzene, 29 C.F.R. § 1910.1028 (1998),⁷

⁶ The MSDS provided, in part, as follows:

HUMAN HEALTH EFFECTS:

Skin contact may cause skin irritation with discomfort or rash; defatting of the skin resulting in skin irritation with discomfort or rash. Prolonged contact may cause drying of the skin with discomfort, itching, burning sensation, blister formation, or rash. Evidence suggests that skin permeation can occur in amounts capable of producing systemic toxicity. ... Inhalation may cause irritation of upper respiratory passages, with coughing and discomfort; or nausea, headache, weakness, or loss of appetite; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

...

Higher or prolonged exposure to benzene may cause reduced white blood cell production; aplastic anemia or leukemia with symptoms of lightheadedness, loss of appetite, abdominal discomfort, blurring of vision, shortness of breath, pale skin, easy bruising, nose bleeds, bleeding from gums and excessive menstrual flow; temporary lung irritation with cough, discomfort, difficulty breathing, or shortness of breath; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation; pulmonary edema (body fluid in the lungs) with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin; decreased pulse rate and blood pressure; abnormal liver or kidney function; or temporary nervous system depression with dizziness, headache, confusion, incoordination, and loss of consciousness; or neurological impairment such as decreased reaction time and visual disturbances. Symptoms may be delayed. Fatality may occur from gross overexposure.

⁷ 29 C.F.R. § 1910.1028 (1998), Appendix A, provides in part:

II. *Health Hazard Data*

A. *Ways in which benzene affects your health.* Benzene can affect your health if you inhale it, or if it comes in contact with your skin or eyes. Benzene is also harmful if you swallow it.

B. *Effects of overexposure.* 1. Short-term (acute)

both of which showed that the hazardous effects of inhalation of benzene and of dermal contact with benzene are consistent with the symptoms experienced by Plaintiffs. He noted that the MSDS is a valid and accurate portrayal of the hazards of benzene because material safety data sheets are prepared to have all of the information regarding health and environmental hazards, and because the manufacturer is required to research the best, peer-reviewed scientific literature to form these material safety data sheets.

Dr. Stevens also referred to a document called the toxicological profile for benzene, which was published by the U.S. Department of Health and Human Services, the Public Health Service, Agency for Toxic Substance and Disease Registry. This document contains all of the knowledge as of 1995 from the standpoint of epidemiological studies and toxicological animal studies regarding the toxicity of benzene and its adverse health effects. Dr. Stevens referred to several of these studies in discussing the effects of overexposure to benzene. He also stated that he reviewed the Supreme Court case of *Industrial Union v. American Petroleum Institute*, in which the Supreme Court discussed several

overexposure: If you are overexposed to high concentrations of benzene, well above the levels where its odor is first recognizable, you may feel breathless, irritable, euphoric, or giddy; you may experience irritation in eyes, nose, and respiratory tract. You may develop a headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.

2. Long-term (chronic) exposure. Repeated or prolonged exposure to benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Many blood disorders associated with benzene exposure may occur without symptoms.

studies regarding the hazardous effects of benzene and the exposure levels at which these effects occur.⁸

In addition to the scientific literature establishing a connection between benzene and the symptoms experienced by Plaintiffs, Dr. Stevens pointed to the strong temporal connection between the refinery workers' exposure to benzene and the onset of their symptoms. The refinery workers developed their symptoms contemporaneously with the first attempts to process HAD, and their symptoms subsided within two weeks after they left the refinery. A temporal connection standing alone is entitled to little weight in determining causation. *Moore*, 151 F.3d at 278. However, a temporal connection is entitled to greater weight when there is an established scientific connection between exposure and illness or other circumstantial evidence supporting the causal link. See *Cavallo v. Star Enter.*, 892 F.Supp. 756, 774 (E.D. Va. 1995), *aff'd. in part*, 100 F.3d 1150 (4th Cir. 1996), *cert. denied*, ___ U.S. ___, 118 S.Ct. 684, 139 L.Ed.2d 631 (1998). In the present case, both scientific literature and strong circumstantial evidence support the causal connection.

⁸ *Industrial Union v. American Petrol. Inst.*, 448 U.S. 607, 100 S.Ct. 2844, 65 L.Ed.2d 1010 (1980). "Exposure to high concentrations [of benzene] produces an almost immediate effect on the central nervous system. Inhalation of concentrations of 20,000 ppm can be fatal within minutes; exposures in the range of 250 to 500 ppm can cause vertigo, nausea, and other symptoms of mild poisoning. ... Persistent exposures at levels above 25-40 ppm may lead to blood deficiencies and diseases of the blood-forming organs, including aplastic anemia, which is generally fatal." *Id.* at 617, 100 S.Ct. at 2851 (citing 43 Fed. Reg. 5921 (1978)).

We conclude that the district court correctly determined that Dr. Stevens had adequate support for his general causation opinion that exposure to benzene at levels of 200-300 ppm would cause the injuries suffered by Plaintiffs. Indeed, Defendants do not seriously challenge this conclusion.

The district court excluded Dr. Stevens's testimony for a related but separate reason. The court found that Dr. Stevens's ultimate conclusion that Plaintiffs' symptoms were caused by their exposure to benzene was not reliable because they failed to demonstrate with sufficient certainty the amount of benzene to which they were exposed. In addition, the district court found that Dr. Stevens did not eliminate other possible causes of the symptoms; in other words, he did not perform a "differential diagnosis."

We recognize that "[s]cientific knowledge of the harmful level of exposure to a chemical, plus knowledge that the plaintiff was exposed to such quantities, are minimal facts necessary to sustain the plaintiffs' burden in a toxic tort case." *Allen*, 102 F.3d at 199. In *Moore*, this Court discussed the admissibility of the proffered testimony of the plaintiff's expert on causation. After finding that the expert offered no scientific support for his general theory that exposure to Toluene solution at any level would cause Reactive Airways Dysfunction Syndrome, the Court stated:

Given the paucity of facts Dr. Jenkins had available about the level of Moore's exposure to the Toluene solution, his causation opinion would have been suspect even if he had scientific support for the position that the Toluene solution could cause RADS in a worker exposed to some minor level of

the solution. Under *Daubert*, "any step that renders the analysis unreliable ... renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology." *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717, 745 (3d Cir. 1994) (emphasis in original).

Moore, 151 F.3d at 279 n. 10. Thus, if Dr. Stevens's causation opinion was not based on sufficient information of the level of benzene to which Plaintiffs were exposed, his methodology would not be reliable, rendering his causation opinion inadmissible. However, the law does not require Plaintiffs to show the precise level of benzene to which they were exposed. *Lakie v. Smithkline Beecham*, 965 F.Supp. 49, 58 (D. D.C. 1997). Based upon the evidence elicited at the *Daubert* hearing and at the trial, we conclude that Plaintiffs presented facts that adequately supported Dr. Stevens's finding of the level of benzene to which the refinery workers were exposed.⁹ Dr. Stevens testified that the refinery workers were exposed to levels of benzene that were several hundred times above the permissible exposure level of 1 ppm. He relied upon several facts in reaching this conclusion. First, Dr. Stevens found the symptoms experienced by the refinery workers to be extremely important. He testified that the cluster of symptoms that the refinery workers began experiencing shortly after HAD was introduced into the refinery - headache, nausea, disorientation,

⁹ Dr. Stevens did not reach a conclusion as to the level of benzene to which Cynthia Craft, Jeannette Luster, and Shari Nevels, the refinery workers' wives, were exposed. His causation opinion as to these Plaintiffs is therefore unreliable and inadmissible.

and fatigue - are well-known symptoms of overexposure to benzene. He concluded that these symptoms were all indications of exposure to benzene at levels of at least 200-300 ppm.

Dr. Stevens also relied upon the results of the Draeger tube tests performed by the refinery workers. The particular Draeger tubes used were designed to measure a maximum of 10 ppm based on twenty pumps. Because these tubes were only pumped twice before becoming saturated, measuring the maximum of 10 ppm, Dr. Stevens calculated that the refinery workers were exposed to at least 100 ppm.

Additionally, Dr. Stevens relied upon the work practices at the refinery. The refinery workers were required to clean the strainers and the oily water separator, and gauge the tanks on a daily basis. All of these functions made exposure to high levels of benzene likely. Dr. Stevens was particularly impressed with the testimony of the refinery workers that they often became soaked in HAD when required to perform this work.¹⁰

¹⁰ At trial, Troy Luster testified:

Q. Okay. How do you pull the strainer out, Mr. Luster?

A. You'd reach in with your hand and pull it out.

Q. All right. And did you come in contact with liquid benzene -- or liquid HAD when you pulled the strainer?

A. Yes, but we were supplied with gloves. We previously -- Barrett -- gloves from Barrett we already had. But you would have to actually stick your hand off into the pipe.

Q. In that process would your skin actually come into contact with the feedstock?

A. Yes, it would, because when you pulled the strainer out you would weigh some of the debris in the bottom of the pipe, and you would have to get your hand in there and rake it out.

(Tr., Vol. VI, at 304).

. . .

Finally, Dr. Stevens relied on the design of the refinery. Dr. Stevens testified during the *in limine* hearing and stated in his report that the refinery was not designed to process highly toxic chemicals such as benzene. Dr. Stevens testified that refineries that process benzene and other toxic chemicals are completely enclosed to eliminate the possibility that these toxic chemicals can escape into the environment. In contrast, at this

Q. All right. Would you inevitably get wet with HAD when you would fix the fin fan?

A. Yes, even though we had, you know, slicker suits, rubber boots or gloves. But we had to test the tubes to find the leak, and we -- that pressure, you would get some on you. If it was up your sleeve or around your neck, you got some on you.
(Tr., Vol. VI, at 307).

Bob Harris testified:

Q. Okay. And what action did you have to take to remedy those in terms of coming in direct contact with the material?

A. You had to get in there and if something was plugged, you had to unplug it.

Q. Did it get on you when this occurred?

A. Yes, because this plant is not a very big plant. Things are not scattered out. When you get in confined areas, when you get in these confined areas and you start working with, like I say, the heat exchangers, pulling, you know, bolts out of it and all that kind of stuff, you try to drain everything out of it. But you still get product on you because you're right up against areas, you know. You can't -- You can't hardly keep it off of you in an area like that.

(Tr., Vol. VI, at 368).

Mike Craft testified:

Q. All right. And what about any actual contact with the product to your skin?

A. You had it. There was no way to avoid it. If you were running your arm up in that six-inch pipe digging packing out and liquid was still coming down the pipe, whether you had a slicker suit on or what, it would get in your sleeves, running down your arms, down your legs while you were digging that out. There was no way to avoid it.

(Tr., Vol. VI, at 550).

refinery, the storage tanks had floating roofs, which vented directly to the atmosphere. Additionally, the oily water separator was not designed to handle highly toxic chemicals as it was an open air separator and had no secondary control devices. Dr. Stevens found it important that the refinery had been designed to process crude oil, which contains only trace amounts of benzene, rather than to process highly toxic chemicals. According to Dr. Stevens it was not unexpected that the refinery - designed to process sweet crude oil - exposed the workers to excessive levels of benzene when it attempted to process HAD.

The above evidence amply supports Dr. Stevens's finding that the refinery workers were exposed to benzene at levels several hundred times the permissible exposure level of 1 ppm. Unlike the expert in *Moore*, Dr. Stevens had more than a "paucity of facts" about the level of benzene to which the refinery workers were exposed. Because Dr. Stevens's causation opinion was based on scientific knowledge that would assist the trier of fact as required by Rule 702, his testimony is admissible. The district court, therefore, abused its discretion in excluding the testimony of Dr. Stevens on medical causation.¹¹

¹¹ We note that Plaintiffs have also offered Dr. Stevens as an expert on industry standards for handling benzene. Although this testimony was not at issue in the *Daubert* hearing, the district court later found that there was nothing in Dr. Stevens's report that would be of probative value. However, the district court stated that "If I received [Dr. Stevens's] analyses into evidence, that would be a different matter." (Tr., Vol. VIII, at 1051). Because we have concluded that Dr. Stevens's testimony as to medical causation is admissible, we trust that the district court will reconsider its exclusion of Dr. Stevens's proffered

C. Admissibility of MDEQ Evidence

We next address the ruling by the district court excluding the proffered testimony of MDEQ personnel. Plaintiffs sought to introduce MDEQ reports concerning violations by BRC and M&S of environmental regulations as evidence of negligence or negligence per se. Specifically, the reports would have shown that the original operating permit for the refinery was to refine crude oil but that an inspection by the MDEQ on September 29, 1995, showed that the refinery was processing HAD. As a result of the inspection, the MDEQ became concerned that the refinery was not operating in compliance with its air operating permit and expressed this concern to Mr. Mullins and later to John Barrett of BRC. The MDEQ also advised that the New Source Performance Standards and the National Emission Standards for Hazardous Air Pollutants, federal regulations applicable to certain air emissions, had probably been violated. After several more inspections, the MDEQ recommended that the refinery cease operating to determine whether the refinery was operating within the permits it held.

After hearing oral argument on this issue, the district court excluded the proffered testimony under Fed.R.Evid. 403, because the probative value of the evidence was outweighed by its potential for prejudice. It found that the MDEQ evidence was cumulative and had very little probative value; therefore, the risk of admitting the evidence outweighed the beneficial effects.

testimony on industry standards.

We have held that Rule 403 determinations will not be disturbed on appeal absent a showing of "'clear abuse.'" *Sprankle v. Bower Ammonia & Chemical Co.*, 824 F.2d 409, 417 (5th Cir. 1987) (quoting *Shipp v. General Motors Corp.*, 750 F.2d 418, 427 (5th Cir. 1985)). Plaintiffs have failed to make this showing.

The district court was entitled to conclude that the MDEQ evidence was cumulative. Plaintiffs sought to introduce this evidence to show that the refinery was not equipped to process HAD and that BRC and M&S did not have the proper permits to process HAD. However, Plaintiffs introduced other evidence of the refinery's deficiencies in its ability to process HAD and of BRC's and M&S's lack of knowledge concerning the proper permits necessary to process HAD. See *Sprankle*, 824 F.2d at 417. Plaintiffs have failed to point to anything in the record to show that the district court abused its discretion in excluding the MDEQ evidence as cumulative.

Additionally, in *Sprankle*, this Court affirmed a district court's order excluding evidence of OSHA regulations and sanctions imposed by OSHA for violations of those regulations. Relying on Rule 403, the district court found that the danger that the jury would place undue emphasis on the OSHA regulations substantially outweighed their probative value, stating that "the jury would undoubtedly place great weight upon the fact that OSHA is a government agency which follows government regulations." *Id.* at 417 n. 10.

Similarly, in the present case, the district court was entitled to conclude that the MDEQ evidence of likely violations of environmental regulations would have been unduly prejudicial due to its apparent official nature. See *Fowler v. Firestone Tire & Rubber Co.*, 92 F.R.D. 1, 2 (N.D. Miss. 1980). We therefore conclude that the district court did not abuse its discretion in excluding the MDEQ evidence.

D. Admissibility of Invocation of the Fifth Amendment

1.

Plaintiffs argue next that the district court erred by refusing to allow them to introduce evidence that John Barrett, the corporate representative and President of BRC, declined to respond to questions at his deposition on grounds that the Fifth Amendment did not require him to incriminate himself. Because a corporation cannot assert a Fifth Amendment privilege, Mr. Barrett asserted the privilege in his individual capacity. See *Braswell v. United States*, 487 U.S. 99, 102, 108 S.Ct. 2284, 2287, 101 L.Ed.2d 98 (1988). The district court found that this evidence had little or no probative value because it did not reveal anything about Plaintiffs' alleged exposure to benzene or the symptoms experienced by Plaintiffs. Rather, the district court found that the evidence would be unduly prejudicial under Fed.R.Evid. 403 as it would allow the jury to draw an adverse inference against the corporate defendant BRC, although Mr. Barrett asserted the privilege in his individual capacity.

Plaintiffs argue that under Mississippi law, they are entitled to receive an instruction from the district court that the jury is permitted to make an adverse inference from such refusal to testify in a civil suit. In *Morgan v. United States Fidelity & Guaranty Co.*, 222 So.2d 820, 828 (Miss.), cert. denied, 396 U.S. 842, 90 S.Ct. 106, 24 L.Ed.2d 93 (1969), the Mississippi Supreme Court stated that an adverse inference can be drawn from a defendant's refusal to testify in a civil case. We have similarly held that while a person may refuse to testify during civil proceedings on the grounds that his testimony might incriminate him, his refusal to testify may be used against him in a civil suit. See *Farace v. Independent Fire Insurance Co.*, 699 F.2d 204, 210 (5th Cir. 1983) (citing *Baxter v. Palmigiano*, 425 U.S. 308, 96 S.Ct. 1551, 47 L.Ed. 810 (1976)). See also *Harrell v. DCS Equipment Leasing Corp.*, 951 F.2d 1453, 1464 (5th Cir. 1992) (stating that "there is no constitutional reason to exclude an earlier invocation of the Fifth Amendment in a civil case").

Therefore, in the present case, Plaintiffs were entitled to an instruction from the court permitting the jury to draw an adverse inference from Mr. Barrett's refusal to testify. We are not persuaded that Mr. Barrett's invocation of his Fifth Amendment privilege in his individual capacity would be unduly prejudicial to the corporate defendant BRC. Upon being served with discovery requests, a corporation must appoint agents who can, without fear of self-incrimination, furnish relevant information available to

the corporation. Craig Peyton Gaumer & Charles L. Nail, Jr., *Truth or Consequences: The Dilemma of Asserting the Fifth Amendment Privilege Against Self-Incrimination in Bankruptcy Proceedings*, 76 Neb. L. Rev. 497, 519 (1997). "It would indeed be incongruous to permit a corporation to select an individual to verify the corporation's answers, who because he fears self-incrimination may thus secure for the corporation the benefits of a privilege it does not have.' Such a result would effectively permit the corporation to assert on its own behalf the personal privilege of its individual agents." *Id.* (quoting *Slone-Stiver v. Kossoff*, 188 B.R. 954, 957 (Bankr. S.D. Ohio 1995)).

BRC designated Mr. Barrett as its corporate representative. When Plaintiffs attempted to depose Mr. Barrett, he invoked his Fifth Amendment privilege in his individual capacity and refused to answer any questions posed to him. BRC cannot reap the benefit of its corporate representative's invocation of the Fifth Amendment in his individual capacity, circumventing the Supreme Court precedent that corporate entities may not assert a Fifth Amendment privilege. *See Braswell, supra.*

BRC points to two cases that hold that the district court has wide discretion under Rule 403 to exclude this evidence even though the Fifth Amendment does not forbid adverse inferences against parties to civil actions when they refuse to testify in response to probative evidence offered against them. *See Farace*, 699 F.2d at 210; *Harrell*, 951 F.2d at 1464. Those cases are easily

distinguishable from today's case.

In *Farace*, the plaintiff refused to cooperate with the fire marshal's investigation, invoking the Fifth Amendment. However, the plaintiff later fully cooperated with the defendant insurance company in its investigation. The district court and this Court found this subsequent cooperation to be a persuasive factor in excluding evidence of the plaintiff's initial refusal to cooperate with the fire marshal.

In *Harrell*, a defendant invoked the Fifth Amendment at his initial deposition, but at a later deposition, answered all questions posed to him. The trial court excluded the evidence of the defendant's failure to testify, finding that the possible prejudice greatly outweighed any probative value. This Court noted, however, the district court's statement that it was willing to reconsider the ruling if the plaintiffs could show that the evidence was more probative, "for example, if [the defendant] refused to answer questions at trial or answered questions differently at trial." *Id.* at 1465. This Court affirmed the district court's ruling, stating that the potential probative value of the defendant's invocation of the Fifth Amendment was "further reduced by the fact that he subsequently answered all of the questions." *Id.*

In contrast, in the present case, Mr. Barrett never cooperated with Plaintiffs. Plaintiffs did not request another deposition, nor did Mr. Barrett appear at trial. The district court therefore

abused its discretion in excluding the evidence of Mr. Barrett's invocation of his Fifth Amendment privilege.

2.

Relatedly, Plaintiffs also argue that the district court erred in granting summary judgment in favor of BRC against the refinery workers employed by BRC, finding that the claims were barred by the exclusivity provision of the Mississippi Workers' Compensation Act. Relying on *Royal Oil Co., Inc. v. Wells*, 500 So.2d 439 (Miss. 1986), Plaintiffs argue that because Mr. Barrett invoked his privilege under the Fifth Amendment, the inference under the law is that all of BRC's actions were intentional and workers' compensation benefits are therefore not the workers' exclusive remedy.

We do not agree with this contention. In *State Farm Life Insurance Co. v. Gutterman*, 896 F.2d 116, 119 (5th Cir. 1990), we held that the adverse inference from a party's refusal to answer questions was not enough to create an issue of fact to avoid summary judgment. Similarly, in the present case, Plaintiffs have presented no other evidence that BRC's actions were intentional. Without more, the adverse inference from Mr. Barrett's refusal to answer questions at his deposition will not preclude summary judgment. The district court therefore correctly granted summary judgment in favor of BRC as to Michael Craft, Troy Luster, Bob Harris, and Larry Oakes, the refinery workers employed by BRC.

III. Judgment as a Matter of Law

With the record now defined, we turn to the district court's order granting Defendants' Motion for Judgment as a Matter of Law. The district court granted the motion as to all Defendants, finding that Plaintiffs had not presented sufficient evidence that exposure to benzene caused their injuries. As to DuPont, the district court concluded that DuPont did not breach any duty to Plaintiffs.

Turning first to the district court's dismissal of DuPont, Plaintiffs argue that DuPont, as a manufacturer of a toxic chemical, breached its duty to warn them of the dangers of its product. In response, DuPont relies upon the "learned intermediary" defense, which allows a manufacturer to discharge its duty to warn by providing "information to a third person upon whom it can reasonably rely to communicate the information to the ultimate users of the product or those who will be exposed to its hazardous effects." *Swan v. I.P., Inc.*, 613 So.2d 846, 851 (Miss. 1993) (en banc).

The learned intermediary defense stems from the Restatement (Second) of Torts § 388, and Comment "n" under § 388. Section 388 requires a manufacturer to provide adequate warnings of the dangers of its product. Comment "n" to § 388 then allows the manufacturer to discharge its duty to warn by providing necessary information about the dangers of the product to a third person upon whom it can reasonably rely to communicate the information to the ultimate users of the product.

Plaintiffs rely heavily on *Swan*, in which a schoolteacher was injured when she was exposed to fumes and spray of polyurethane

roofing materials being used to re-roof the school where she worked. The manufacturer of the polyurethane coating filed a Motion for Summary Judgment based on the learned intermediary defense, which was granted by the district court. The Mississippi Supreme Court reversed the grant of summary judgment in favor of the manufacturer. The Court reasoned that the learned intermediary defense requires the manufacturer to rely reasonably on an intermediary to convey the information to the ultimate users of the product or those who will be exposed to its hazardous effects. Although the intermediary was an experienced applicator of polyurethane roofing products, it was unclear whether the manufacturer had ever provided information on the product to the intermediary. Therefore, material issues of fact were presented as to whether the manufacturer reasonably relied upon the intermediary.

As the Mississippi Supreme Court stated in *Swan*, the penultimate question is the reasonableness of the manufacturer in relying on the intermediary to convey the warning to the ultimate users of the product. In contrast with *Swan*, however, where it was unclear whether the manufacturer ever provided the intermediary with information on the product, in today's case, DuPont provided M&S and Donald Mullins with extensive information on the dangers of HAD and benzene.

DuPont wrote M&S that it would be providing product stewardship before it made any shipments of HAD to M&S. DuPont attached a summary of the benzene OSHA standard. Brad Kulesza, a

DuPont representative, met with Mr. Mullins at the refinery to explain safe handling procedures for HAD, to review the benzene OSHA standard, and to answer any questions concerning HAD. DuPont later wrote to M&S and identified six safety items that M&S would have to complete before DuPont would deliver HAD to the refinery. Finally, DuPont wrote yet another letter to M&S providing safe handling literature for HAD, including the MSDS on HAD. Mr. Mullins responded to this final letter by acknowledging in writing that he had received the safe handling literature and that he would instruct his employees and any others who might handle HAD in the safe handling procedures.

These facts are similar to those in *Adams v. Union Carbide Corp.*, 737 F.2d 1453 (6th Cir.), *cert. denied*, 469 U.S. 1062, 105 S.Ct. 545, 83 L.Ed.2d 432 (1984), cited with approval in *Swan*. In *Adams*, the plaintiff, an employee of General Motors, filed suit against Union Carbide alleging that she was injured as a result of Union Carbide's failure to warn the employees of General Motors of the hazards associated with toluene diisocyanate, which Union Carbide manufactured and supplied to General Motors. Union Carbide had provided a manual to General Motors that addressed the hazards associated with the product and included information on the safe use and handling of the product and a chemical safety data sheet. Officials from Union Carbide also met with General Motors to discuss the handling of the product to minimize personnel exposure. The court found that Union Carbide had fulfilled its duty to warn

by providing this information to General Motors, who in turn had a duty to its employees to provide them with a safe place to work. It was therefore reasonable for Union Carbide to rely upon General Motors to convey the information about the product to its employees.

Like the manufacturer in *Adams*, DuPont discharged its duty to warn about the hazards of its product by giving this warning to Donald Mullins and M&S, an independent intermediary. The district court correctly granted DuPont's Motion for Judgment as a Matter of Law.

We next address the district court's order granting judgment as a matter of law in favor of BRC, M&S, and Donald Mullins. As discussed above, we conclude that the district court erred in excluding the testimony of Dr. Frank Stevens and the evidence that Mr. Barrett invoked his Fifth Amendment privilege. Once we include this evidence, the record is sufficient to raise jury issues as to the liability of M&S and Donald Mullins for the illnesses of Michael Craft, Troy Luster, Bob Harris, Terry Nevels, and Larry Oakes, and also jury issues as to the liability of BRC to Terry Nevels. Therefore, we vacate the district court's grant of judgment as a matter of law in favor of M&S and Donald Mullins on the claims of Michael Craft, Troy Luster, Bob Harris, Terry Nevels, and Larry Oakes, and the district court's grant of judgment as a matter of law in favor of BRC on the claims of Terry Nevels.

However, we affirm the district court's grant of judgment as a matter of law with respect to the claims of Cynthia Craft,

Jeanette Luster, and Shari Nevels. Because Dr. Stevens did not express a reliable opinion as to the cause of these Plaintiffs' illnesses, the critical causation element is not supported by credible evidence. Therefore, judgment as a matter of law in favor of Defendants was proper as to these Plaintiffs.

The judgment of the district court is therefore
AFFIRMED IN PART, REVERSED IN PART, AND REMANDED FOR FURTHER
PROCEEDINGS CONSISTENT WITH THIS OPINION.