

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

CAROL HELLER and THOMAS HELLER, : CIVIL ACTION
individually and as the parents :
and natural guardians of :
EMILY and KATHERINE HELLER :
Plaintiffs :
v. :
SHAW INDUSTRIES, INC. : No. 95-7657
Defendant :

MEMORANDUM

Yohn, J.

August , 1997

In September, 1993, plaintiffs Carol and Thomas Heller purchased and moved into a new home with their daughters Katherine and Emily. Sometime after, Carol and Thomas Heller began to experience respiratory problems, including asthma, difficulty breathing, wheezing, coughing, and dizziness. Plaintiffs claim that their illnesses were caused by exposure to a combination of chemicals emitted by newly installed carpets manufactured by defendant Shaw Industries, Inc. Although defendant subsequently removed the carpets, plaintiffs continued to experience respiratory problems and, as a result, plaintiffs eventually moved out of and sold their home.

Subsequently, plaintiffs filed suit against defendant, alleging claims of breach of warranty, strict liability, negligent and intentional misrepresentation, and violation of Pennsylvania consumer protection laws. Plaintiffs seek to

recover for personal injuries, future medical monitoring costs, and punitive damages.

Presently, defendant has moved in limine to exclude the testimony of plaintiffs' expert witnesses. Defendant argues that the opinions of plaintiffs' experts pertaining to causation are not grounded on a scientific methodology and are not reliable. Additionally, defendant has moved for summary judgment on all claims. Defendant contends that plaintiffs have failed to proffer any evidence to establish that defendant's carpets were defective, that the family members' symptoms were caused by defendant's carpets, that plaintiffs suffer a significant increased risk of contacting a serious latent disease, or that medical monitoring and testing procedures exist which make the early detection and treatment of future disease possible and beneficial.

For the reasons that follow, defendant's motions will be granted.

I. BACKGROUND

On September 30, 1993, plaintiffs purchased and moved into a nine year old house and property located at 1205 Fox Glove Lane, West Chester, Pennsylvania (the "Fox Glove residence"). Shortly after, Thomas Heller began to experience allergy symptoms such as nasal congestion, a sore throat, and a thick nasal discharge.

On November 15, 1993, Thomas Heller sought treatment from Dr. Bennett of Bennett, Mark & Schuster for his symptoms and on December 9, 1993, Thomas consulted Dr. Joseph E. Pappano, an allergist. (Defend. Exhib. F.) Heller informed Pappano that he previously had experienced allergic reactions to cats, and that the prior owner of the Fox Glove residence had owned cats. Pappano concluded that Thomas' symptoms were likely caused by an allergic reaction to residual cat hair and, in the way of remedy, Pappano advised Thomas to remove the old carpets from the house.

On December 13-14, 1993, plaintiffs replaced the existing carpet and carpet pad in the second floor hall, loft, guest room, stairs and first floor master bedroom suit with new carpet pad and V&K Interiors Sutton Newance carpet (Newance carpet)--an off-white, berber type, synthetic carpet manufactured by defendant. (Plain. Exhib. 1 at 98.) The Newance carpet installed in the Heller home was made from polypropylene and nylon fiber woven to a polypropylene primary and secondary backing, which was then bonded with a two layer styrene-butadiene rubber (SBR), or latex, backing. (Plain. Exhib. S-1 at 38.)

Plaintiffs also replaced the old carpet and pad in the two upstairs bedrooms (Katherine and Emily's rooms) with carpet remnants. Those remnants were not the same brand and color as the Newance carpet. (Plain. Exhib. 2 at 92-93.) Because there was not enough of Emily's style carpet to cover all her closet, plaintiffs used some of the Newance style carpet in Emily's closet. (Plain. Exhib. 2 at 135.) Later, in March, 1994,

plaintiffs replaced the carpet and pad in the family room with hardwood floor. (Plain. Exhib. 1 at 184-85.) In the living room and dining room, plaintiffs kept the existing carpeting. (Plain. Exhib. 1 at 97.)

In the last week of December, 1993, Carol Heller began to experience severe respiratory illness, which became progressively worse throughout the Winter and Spring of 1994. Carol and Thomas Heller's symptoms included asthma, difficulty breathing, wheezing, coughing and dizziness; Katherine Heller complained of shortness of breath, and appeared off-color. (Plain. Exhib. 1 at 111-125; Exhib. 2 at 100-103; Exhib. 1 at 102-111.)

Thomas and Carol Heller initially sought treatment from Dr. Julio Amadio, who is Carol's father. Amadio referred them to Dr. Pappano and Dr. Edward A. Theurkauf, a pulmonologist. (Plain. Exhib. 6 at 6-9.) On February 15, 1994, Carol Heller visited Pappano, and informed him that she began experiencing mild wheezing during the night starting in early January when she moved her sleeping quarters from the upstairs guest bedroom to the master bedroom on the first floor. Carol further reported that three days previously, she had experienced nausea, vomiting, and a viral type infection, followed by bouts of wheezing and shortness of breath, and that her symptoms improved significantly when she went out of doors. Pappano conducted allergy skin tests on Carol and found that she tested positive to house dust, house dust mites, feathers and dogs, but not to cats, grass or ragweed.

Pappano noted that there was no family history of allergic respiratory disease, with the exception of some mild symptoms that Carol had once experienced when visiting a seashore house in Ocean City, New Jersey. Carol also informed Pappano that her home contained newly installed synthetic rugs, and Carol produced a carpet sample for Pappano to examine. Pappano noted that the carpet definitely had a strong chemical odor, and recommended that Heller employ Todd Environmental Consultants (Todd Environmental) to analyze the rug samples and air quality in her home. (Defend. Exhib. H.)

Following Carol's consultation with Pappano, the Heller family took the following measures to isolate the cause of their reaction: (1) encapsulated all their bedding in plastic; (2) hired a house cleaner; (3) removed the family dog from the home; (4) replaced an electronic air-cleaner; (5) replaced all drapes; (6) changed dry cleaners; and (7) purchased a new vacuum cleaner. However, these measures had no effect on their symptoms. (Plain. Exhib. 1 at 180-182; Exhib. 5 at 34-35.)

On February 23, 1994, the Heller family hired Todd Environmental to perform a surface dust analysis and evaluation to determine whether dust in the house contained allergens. The results of these tests, however, proved unremarkable. (Plain. Exhib. 9.)

Carol Heller returned to Dr. Pappano on March 19, 1994. Carol told Pappano that she was continuing to experience wheezing, especially in the mornings.

On March 21, 1994, Carol Heller called defendant to inquire about the carpeting. Her call was referred to Todd Bethel, a chemist then employed by defendant. Carol described to Bethel her family's symptoms and inquired whether he had heard of other customers having severe respiratory problems. Bethel told Carol that he had never heard of anything like that happening, and explained that defendant's carpets carry a "green tag," which indicates that the rugs are safe. (Plain. Exhib. 1 at 168-74.) The next day, Bethel forwarded to Heller a copy of a list of ingredients in plaintiffs' carpeting, and a brochure from the Carpet and Rug Institute (CRI) entitled "Carpet and Indoor Environment." (Plain. Exhib. 1 at 168-201; Exhib. 10 at 3.)

Because of their continuing illnesses, on April 7, 1994, the Heller family moved out of their home.

The next day, Carol Heller visited Dr. Edward A. Theurkauf, a pulmonologist, for treatment of her respiratory illness. Theurkauf conducted pulmonary function tests on Carol--the results of which were normal--and diagnosed her as suffering from bronchospasms precipitated by environmental factors.

(Defend. Exhib. K.) Two weeks later, Carol informed Theurkauf that her symptoms had improved since she had been away from the Fox Glove residence.

On April 14, 1994, Todd Environmental conducted an air monitoring test at the Hellers' home. Todd collected a sample of air over an eight hour period in the walk-in closet of the upstairs bedrooms--Emily's room--and the sample was sent to MDS

Laboratories (MDS) for analysis. MDS analyzed the sample with a standard gas chromatography/mass spectroscopy (GCMS) procedure that is capable of detecting and quantifying volatile organic compounds (VOCs) down to less than one part per billion (ppb). The GCMS procedure detected the following levels of VOCs: total VOCs 20.48 ppb; benzene 2.2 ppb; ethyl benzene 0.69 ppb; cumene 0.11 ppb; 1,1,1-Trichloroethane 0.09 ppb; toluene 2.41 ppb; xylene 2.57 ppb; carbon tetrachloride 0.13 ppb; tetrachloroethylene 0.24 ppb; 2 butoxy ethanol 5.6 ppb; propyl benzene 1.62 ppb; 1 ethyl 3 methyl benzene 1.06 ppb; 1 methyl 3 propyl benzene 1.37 ppb; 1 methyl ethyl benzene 1.25 ppb; and 1 ethyl 4 methyl benzene 1.12 ppb. (Plain. Exhib. 12.) In total, MDS detected 14 different VOCs.

On May 5, 1994, at plaintiffs' request, defendant removed the Newance carpeting from the Fox Glove residence and refunded plaintiffs the amount they had paid for the carpets. (Plain. Exhib. 1 at 174.) After the carpet was removed, the windows were opened and the house was aired. Six days later, Todd Environmental repeated the previously performed air sample test. The results of the second test revealed the following levels of VOCs: benzene 0.55 ppb; toluene 2.62 ppb; ethyl benzene 0.54 ppb; xylene 2.9 ppb; and tetrachloroethylene 0.24 ppb. The test revealed a decrease in the presence of benzene, 2 butoxy ethanol, and various compounds that contain a benzene ring, termed benzene homologues. Further, the total number of types of

VOCs decreased from 14 to 5 and the concentration of total VOCs dropped to one third the previous level. (Plain. Exhib. 13.)

Subsequently, plaintiffs replaced their carpeting with superhypoallergenic rugs (which cost more than the Newance carpeting) and on May 11, 1994, plaintiffs visited their home. (Plain. Exhib. at 174.) However, although they were in the home for only about one hour, Thomas and Carol Heller's symptoms reappeared.

On May 14, 1994, Carol Heller again visited Dr. Pappano. Carol informed Pappano that her symptoms had improved after moving out of the Fox Glove residence, but that her condition deteriorated when she went back to the Fox Glove home.

After having moved out of the home on April 7, 1994, plaintiffs never returned to the house other than to remove their personal belongings because, according to plaintiffs, their symptoms would reappear whenever they visited the residence. In November, 1994, plaintiffs sold their home for less than they paid for the property in September, 1993. Carol Heller claims that although she currently is not receiving any treatment for asthma, she continues to experience some, albeit subdued, symptoms. (Plain. Exhib. 1 at 178-79, 191-96, 209.)

On December 8, 1995, plaintiffs filed suit against defendant, alleging the following counts: (1) breach of warranty in violation of the Magnuson-Moss Act, 15 U.S.C. § 2310(d); (2) failure to warn; (3) negligent and intentional misrepresentation; (4) defective design and/or manufacture; (5) violation of

Pennsylvania consumer protection laws; and (6) medical monitoring. The complaint alleges that the Newance carpets manufactured by defendant emitted toxic substances, such as benzene, toluene, xylene and vinyl chloride, and that such substances caused plaintiffs' present symptoms and significantly enhanced their risk of contracting future illnesses. Plaintiffs aver that since 1980, defendant has known that carpeting can off-gas toxic substances, that consumers exposed to such substances have suffered adverse health effects, and that defendant concealed its knowledge and failed to warn consumers of the health risks posed by its product. Plaintiffs seek damages for losses incurred in having to sell their Fox Glove home, expenses incurred in attempting to ascertain and eliminate the cause of their suffering, pain and suffering, future medical monitoring costs, and punitive damages.

On March 20, 1997, defendant moved for summary judgment and on June 24, 1997, defendant moved in limine to exclude the testimony of Alan Todd and Doctors Amadio, Pappano and Theurkauf with respect to their opinions regarding causation.

From July 21 to 29, 1997, the court conducted an evidentiary hearing on the admissibility of the testimony of plaintiffs' expert witnesses. At the end of the hearing, plaintiffs withdrew their claims with respect to alleged physical injuries sustained by Thomas, Katherine, and Emily Heller, but continue to pursue their claim with respect to Carol's alleged physical injuries.

II. DISCUSSION

Defendant argues that it is entitled to summary judgment because plaintiffs' expert opinion evidence regarding causation is inadmissible and, therefore, there is insufficient evidence to sustain a jury finding that the Newance carpets were defective and caused plaintiffs' alleged injuries. Defendant contends that the methodologies applied by plaintiffs' experts are not scientific and that the expert's opinions are hence unreliable.

Plaintiffs proffer proof of causation in the form of expert opinion testimony by Alan Todd, an industrial hygienist, and Doctors Julio Amadio, Joseph Pappano and Edward Theurkauf. Plaintiffs contend that Carol Heller suffered environmentally induced asthma caused by a cocktail of seven VOCs emitted by Newance carpet manufactured by defendant. Plaintiffs claim that the particular batch of carpet installed in the Fox Glove residence was defective in that it emitted dangerously high levels of benzene, 2 butyl ethanol, and five homologues of Benzene (propyl benzene, 1 ethyl 4 methyl benzene, 1 methyl ethyl benzene, 1 ethyl 3 methyl benzene, and 1 methyl 3 propyl benzene), all of which can cause respiratory irritation.

A. Legal Standard

Summary judgment is appropriate if the admissible evidence presents no genuine issue of material fact and the moving party is entitled to judgment as a matter of law. Sempier

v. Johnson & Higgins, 45 F.3d 724, 727 (3d Cir. 1995) (citing Chipollini v. Spencer Gifts, Inc., 814 F.2d 893, 896 (3d Cir. 1987) (en banc)). The moving party need not produce evidence to disprove the opponent's claim but does carry the burden of demonstrating the absence of any genuine issue of material fact. Celotex Corp. v. Catrett, 477 U.S. 317, 323 (1986). In turn, the non-moving party cannot rely on the allegations contained in the complaint. Instead, the nonmoving party must offer specific facts indicating that a genuine issue for trial exists. Id. at 324. If there are no genuine issues as to material facts, the court must determine whether the moving party is entitled to a judgment as a matter of law. Fed. R. Civ. P. 56(c).

Plaintiffs' have asserted claims of failure to warn and defective design and/or manufacture claims. Under section 402A of the Restatements (Second) of Torts, which was adopted by the Pennsylvania Supreme Court in Webb v. Zern, 220 A.2d 853, 854 (Pa. 1966), a manufacturer is strictly liable for injuries caused by a product that is "unreasonably dangerous to intended users for its intended use." Parks v. AlliedSignal, Inc., 113 F.3d 1327, 1330 (3d Cir. 1997) (quotation omitted). To establish a claim under § 402A, the plaintiffs must prove that the product was defective and that such defect caused the plaintiffs' injuries. See Berkebile v. Brantly Helicopter Corp., 337 A.2d 893, 898 (Pa. 1975).¹ To establish liability for failure to

. As a threshold matter, where plaintiffs allege defective
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warn, plaintiffs must prove that the lack of a warning (a) rendered the product "unreasonably dangerous," and (b) was the proximate cause of plaintiffs' injuries. Staymates v. ITT Holub Industries, 527 A.2d 140, 147 (Pa. Super. Ct. 1987).

For a defective design and/or manufacture claim, the plaintiff bears the burden of demonstrating proof of causation. See City of Philadelphia v. Lead Industries Ass'n, 994 F.2d 112, 123 (3d Cir. 1993); Robertson v. Allied Signal, Inc., 914 F.2d 360, 366 (3d Cir. 1990). Similarly, the absence of proof of causation is fatal to a failure to warn claim. Staymates, 527 A.2d at 147. Plaintiffs must show that the harmful result would not have occurred but for the defendant's conduct, and that the causal connection between the defendant's conduct and the plaintiffs' injuries is not remote. See Robertson, 914 F.2d at 367. Although causation is normally an issue of fact for the

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design, the court must conduct a risk-utility analysis to determine as a matter of law whether the product at issue is defective. Surace v. Caterpillar, Inc., 111 F.3d 1039, 1046 (3d Cir. 1997). A product design is defective where the product's condition justifies placing the risk of loss on the manufacturer or supplier because the unavoidable dangers posed by the product outweigh its social utility. Id. "If the court determines that the product is defective as alleged, then the case is submitted to the jury to determine whether the facts indicate that when the product left the manufacturer's control it 'lack[ed] any element necessary to make it safe for its intended use or possess[ed] any feature that rendered it unsafe for its intended use.'" Id. at 1044 (quoting Azzarello v. Black Bros. Co., 391 A.2d 1020, 1027 (Pa. 1978)). The court has not conducted a risk-utility analysis to determine whether synthetic carpets made by defendant are defectively designed because that issue was not fully briefed by the parties, and because the court will dispose of the case on causation grounds.

jury, the question becomes one of law where the relevant facts are not in dispute and the remoteness of the causal connection between the defendant's negligence and plaintiffs' injuries is clearly apparent. See Conti v. Ford Motor Co., 743 F.2d 195, 197-98 (3d Cir. 1984).

In toxic tort claims, plaintiffs must prove general and specific causation. See DeLuca v. Merrell Dow Pharmaceuticals, 911 F.2d 941, 958 (3d Cir. 1990). General causation addresses whether products of the same nature as defendant's product are capable of causing the type of injuries alleged here; specific causation addresses whether defendant's product more likely than not caused injuries in this particular case. Rutiigliano v. Valley Business Forms, 929 F. Supp. 779, 783 (D.N.J. 1996), aff'd sub nom. Valley Business Forms v. Graphic Fine Colors, Inc., ___ F.3d ___ (3d Cir. June 27, 1997). To prove specific causation, plaintiffs must prove that (1) that the defendant released toxins into the environment, (2) that plaintiffs were exposed to such toxins, (3) that plaintiffs have an injury, (4) and that the toxins released by defendant caused that injury. See In re TMI, 67 F.3d 1103, 1118-19 (3d Cir. 1995), cert. denied, 116 S. Ct. 1034 (1996); In re Paoli R.R. Yard PCB Litigation, 916 F.2d 829, 860 (3d Cir. 1990). The first element represents a combination of the traditional tort elements of duty and breach, while the remaining elements add an exposure prong to the causation and injury requirement. In re TMI, 67 F.3d at 1119. The exposure element requires plaintiffs to show that they were exposed to

levels that exceed the normal background level, Id., while the causation element requires proof that the dosage and duration of plaintiffs' exposure were at levels that are hazardous to human beings. See Mateer v. U.S. Aluminum, 1989 WL 60442, at *6 (E.D. Pa. June 6, 1989) (holding that plaintiffs "must at a minimum show that their level of exposure created a significant potential health risk."). Id.

Where essential elements of plaintiffs' case depend on expert testimony, a determination of defendant's summary judgment motion must be preceded by a determination of the relevance and reliability, and hence admissibility, of the proffered expert testimony. See Rutigliano, 929 F. Supp. at 783. In Daubert v. Merrell Dow Pharmaceuticals, 113 S. Ct. 2786, 2795 (1993), the Supreme Court held that Federal Rule of Evidence 702² requires the district court to ensure that any and all scientific testimony and evidence is reliable. Pursuant to Fed. R. Evid. 104(a),³ the court must make a preliminary assessment of the

. Rule 702 provides that:

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.

Fed. R. Evid. 702.

3. Rule 104(a) provides:

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reasoning or methodology underlying the proffered expert scientific testimony. See Id. at 2796. The district court's gatekeeper role entails the preliminary assessment of the qualifications of the expert, and the reliability and fit of the testimony; the court must ascertain whether the expert is qualified to render an opinion on the subject, whether the methodology or reasoning underlying the testimony is scientifically valid, and whether the opinion can be applied to the facts at issue. Daubert, 113 S. Ct. at 2796.⁴

The party proffering the testimony must show by a preponderance of evidence that the techniques or principles underlying an opinion are sufficiently reliable so that the opinion will aid the jury in reaching an accurate decision. DeLuca, 911 F.2d 956; United States v. Downing, 753 F.2d 1224, 1240 n.21 (3d Cir. 1985) ("When there is a serious question of reliability of evidence, it is appropriate for the court to exercise some degree of evidentiary screening function."). The

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Preliminary questions concerning the qualification of a person to be a witness, the existence of privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b) [pertaining to conditional admissions]. In making its determination it is not bound by the rules of evidence except those with respect to privileges.

Fed. R. Evid. 104(a).

4. Defendant does not challenge the qualifications of plaintiffs' experts or whether their testimony fits the particular disputed factual issues in the case.

expert's opinion must be based on scientific knowledge; that is the methods and procedures must be grounded in science, rather than "subjective beliefs or unsupported speculation." Daubert, 113 S. Ct. at 2795. To qualify as "scientific knowledge," "an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by the appropriate validation--i.e., 'good grounds' based on what is known." Id.

The trial judge should not exclude evidence merely because he or she disagrees with the expert's conclusions or finds that the expert's techniques have flaws sufficient to render the expert's conclusion inaccurate. In re Paoli R.R. Yard PCB Litigation, 35 F.3d 717, 745 (3d Cir. 1994). "The focus . . . must be solely on principles and methodology, not on the conclusions that they generate." Daubert, 113 S. Ct. at 2797. Indeed, the fact finder may be assisted in reaching an accurate result by a consideration of the expert's testimony together with an assessment of its flaws. In re Paoli 35 F.3d at 745. However, where the flaws are large enough that the expert lacks "good grounds" for his or her conclusion, the court should exercise its gatekeeper role and exclude the evidence. Id. at 746.

In determining the validity of the methodology and principles underlying an expert's opinion, the district court should take into consideration the following factors: (1) the existence and maintenance of standards controlling the technique's operation; (2) whether the methodology has been

subject to peer review and publication; (3) what the known or potential rate of error of that technique may be; (4) whether the methodology has been generally accepted in the scientific community; (5) the degree to which the expert is qualified; (6) the novelty of the technique, that is, its relationship to more established modes of scientific analysis; (7) and the non-judicial use to which the scientific technique is put. Id.⁵

Additionally, the court must make an independent evaluation of proffered expert testimony to ascertain whether it conforms to the requirements of Federal Rule of Evidence 703, which mandates that the facts and data upon which an expert relies in reaching a conclusion must be of a type reasonably relied upon in the particular field. In re Paoli, 35 F.3d at 747.⁶ "[T]he proper inquiry is not what the court deems reliable

5. After assessing the reliability of the evidence, the court must also weigh the danger that the evidence might confuse or mislead the jury through an unwarranted "aura of reliability." Downing, 753 F.2d at 1239. This analysis is performed under the rubric of the probative against prejudice balancing test of Fed. R. Evid. 403. In order to exclude evidence under Rule 403, "there must be something particularly confusing about the scientific evidence at issue--something other than general complexity of scientific evidence." Paoli, 35 F.3d at 747 (emphasis in original). However, Rule 403 is rarely appropriate as a basis for pre-trial exclusion, unless the in limine hearing creates the "virtual surrogate for a trial record." Id.

6. Fed. R. Evid. 703 provides:

The facts and data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before trial. If of a type reasonably relied upon by experts in the particular field in forming opinions

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but what experts in the relevant discipline deem it to be." DeLuca, 911 F.2d at 952 (quotation omitted). However, "it is the judge who makes the determination of reasonable reliance, and [] for the judge to make the factual determination under Rule 104(a) that an expert is basing his or her opinion on a type of data reasonably relied upon by experts, the judge must conduct an independent evaluation into reasonableness." Id. at 748 (emphasis in original). The court must ascertain that the expert had good grounds for finding the data reliable and good grounds to rely on this data to draw the conclusion reached by the expert. Id. at 749.⁷

B. The Testimony of Plaintiffs' Experts

i. Alan Todd

Alan Todd, proffered by plaintiffs as an expert in industrial hygiene and environmental assessment and occupational health and safety, opined in his report and at the in limine hearing that Carol Heller's symptoms were caused by exposure to

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or inferences upon the subject, the facts or data need not be admissible in evidence.

. In addition, in cases governed by Pennsylvania law, the court must apply the Pennsylvania rule requiring experts to testify that defendant's actions caused plaintiffs' illness with a reasonable degree of medical certainty. See Paoli, 35 F.3d at 750-52. The Pennsylvania requirement of reasonable medical certainty is not merely a rule of admissibility but also constitutes part of the plaintiffs' burden of proof under Pennsylvania law. Id.

high concentrations of benzene, 2 butoxy ethanol and benzene homologues emanating from the Newance carpeting.

With respect to general causation, defendant argues that the undisputed scientific evidence shows that carpet emissions do not present a risk to human health.⁸ Defendant's expert Ronald E. Gots, M.D., Ph.D., testifies that there have been five significant risk assessment studies of emissions from carpeting, and that each study found that the levels of VOCs emitted from carpets were well below levels anticipated to produce health effects based on available toxicological data. (Defend. Exhib. J at 22.)⁹

. The following risk assessment studies conducted tests for emissions from nylon, SBR-backed carpets: (1) in 1990, Terra Inc. conducted emission testing on eight SBR-backed carpets; (2) in 1992, the United States Consumer Products Safety Commission conducted emission tests on four carpet samples, two of which were SBR-backed; (3) in 1992, the Research Triangle Institute performed a risk analysis on emissions from nineteen different carpet samples, all of which were SBR-backed carpets; (4) in 1994, Environ. Corp. conducted a risk analysis of chemicals found to be emitted from new carpets; and (5) in 1994, Alan Hedge, Ph.D. and Rodney Dietert, Ph.D. of Cornell University prepared a review summarizing the current literature concerning chemical emissions from new carpets and their potential for toxicity. All five studies concluded that SBR-backed carpeting poses no significant health threat.

9. Plaintiffs argue that defendant's own internal memoranda reveal that the five emissions studies are not scientifically valid. Plaintiffs note that none of the studies is published, and that the studies surveyed a relatively small number of VOCs emitted from a statistically insignificant number of carpets. Moreover, plaintiffs contend that the studies were developed by defendant and the carpet industry as part of a public relations effort to portray the industry in a favorable light. Plaintiffs quote Carey Mitchell, defendant's expert witness on the subject of carpet emission research, who characterized the research as "political rather than scientific." (Plain. Exhib. 34.)

At the in limine hearing, Todd opined that SBR-backed carpeting can cause the type of symptoms experienced by Carol Heller. To support his opinion, Todd cited the following: research conducted in Scandinavia pertaining to "sick building syndrome"¹⁰; various defendant internal memoranda acknowledging that carpets emit VOCs; and records of numerous consumer inquiries and complaints to defendant, CRI, and the government concerning carpet odors and related health risks.

The court finds that the information cited by Todd does not support his conclusion that SBR-backed carpets can cause the types of symptoms experienced by Carol Heller. The publications relied on by Todd do not support his claim that SBR-backed carpeting can cause respiratory illness. The first article, by Lars Molhave, does not relate to carpeting but solely addresses the health effects of various VOC exposures. (Plain. Exhib. 17.) The second article, by Dan Norback and Margareta Torgen, reports a correlation between wall-to-wall carpeting and the frequency of respiratory symptoms among children in schools in Sweden. The carpets involved, however, had been installed eight to ten years

10. See Lars Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Proceedings of 5th International Conference on Indoor Air Quality and Climate (1990) (Plain. Exhib. 17); Dan Norback and Margareta Torgen, A Longitudinal Study Relating Carpeting With Sick Building Syndrome, 15 *Envtl. Int'l* 129-35 (1989) (Plain. Exhib. 18); B. Seifert, D. Ullrich and R. Nagel, Volatile Organic Compounds from Carpeting, Proceedings of the 8th World Clean Air Congress (1989) (Plain. Exhib. 19); Dawn Tharr, Organic Vapor Emissions from Wall-to-Wall Carpets as a Source of Indoor Air Pollution, 11(5) *Appl. Occup. Envtl. Hyg.* 436-39 (1996) (Plain. Exhib. 20).

earlier and the authors of the article specifically state that chemical emission from the carpeting was a less probable cause of the childrens' symptoms. (Plain. Exhib. 18.) The third article, by B. Seifert, D. Ullrich and R. Nagel, reports the results of chamber and field tests for VOC emissions from new carpeting. The authors conclude that although the new carpeting emitted 4 phenylcyclohexane, styrene and 2 ethylhexanol, it was the adhesives used to fix the carpet that emitted general aromatic hydrocarbons at sufficiently levels to explain complaints like those associated with "sick building syndrome." (Plain. Exhib. 19.) Here, there is no dispute that the Newance carpet was not installed with adhesives. The fourth article, by Dawn Tharr, reports the results of ambient air quality tests conducted in rooms containing newly installed, wall to wall, glued down, SBR-backed carpets. Tharr discovered that the new carpets emitted a complex mixture of refined petroleum solvents, and that the majority of the solvents were released in the first few days after installation. However, Tharr reports that "[n]one of the measured air concentrations approached the reported sensory thresholds." (Plain. Exhib. 20.)

Similarly, the defendant memoranda cited by Todd are not of the type of evidence upon which an expert would reasonably rely in concluding that carpets can cause asthma. See Paoli, 35 F.3d at 749. Although Todd has not elaborated on the significance of the defendant memoranda and customer complaints, plaintiffs submitted copies of that information in their summary

judgment exhibits and discussed its import in their summary judgment briefs. The submitted evidence consists of memoranda in which existing and former employees of defendant acknowledge that new carpets emit VOCs, specifically toluene, 2 butoxy ethanol, 4 phenylcyclohexane, toluene, benzene, 1,1,1-trichloroethane, methylene chloride, and chloroform. Although the submitted memoranda reveal that defendant was aware that new carpets emit VOCs, the memoranda do not reveal what level of VOC emissions had been discovered by defendant, or whether the reported emissions were at a levels known to be hazardous to health.¹¹

Again, the large number of complaints cited by plaintiffs regarding new carpet emissions do not establish general causation because plaintiffs offer no evidence to show that such complaints concern incidents substantial similar to the incident here. See Spino v. John S. Tilley Ladder Co., 1997 WL 329133, at *2 (Pa. June 17, 1997)(holding that evidence concerning other accidents involving the instrumentality that causes the present harm is relevant to prove causation where the other accidents were sufficiently similar to plaintiff's accident); DiFrischia v. New York Central Railroad Co., 307 F.2d 473, 476 (3d Cir. 1962). Plaintiffs relate details of two

11. Plaintiffs also discuss a 1985 letter from E.C. Roberts, Ph.D., the manager of the Measurements Department of WestPoint Pepperell Research Center, to Carey Mitchell, defendant's Director of Technical Services. Roberts reported a pattern of complaints and reported symptoms associated with new carpet installations, and described air sample tests conducted by an unnamed school, which detected the presence of 58 chemicals emitted by carpet nearly two months after installation.

specific instances in which consumers have developed breathing difficulties after having new carpets installed. (Plain. Exhib. S-8, S-9.) However, plaintiffs have not established that those instances involved facts and circumstances sufficiently similar to the facts and circumstance here. Similarly, plaintiffs submit no evidence regarding the nature of the other inquiries and complaints received by defendant, CRI, or the government.

Regarding specific causation, Todd posits that Carol Heller's illness was caused by dangerously high levels of benzene, 2 butoxy ethanol and five benzene homologues emitted by the Newance carpet installed at the Fox Glove residence. Todd estimates that the total ambient air concentration of the above seven hydrocarbons in the Heller residence after the initial 24 hour period following the installation of the rugs in mid-December, 1993 was over 52.71552 parts per million (ppm) or 52,715.52 ppb, and that the concentration of benzene alone was 6.84032 ppm or 6,840.32 ppb. Todd believes that such exposure exceeds the Permissible Exposure Limits (PELs) promulgated as workplace standards by the Occupational Safety and Health Administration (OSHA) and the Threshold Limit Values (TLV), which are workplace exposure guidelines derived by the American Conference of Governmental Industrial Hygienists (ACGIH). In addition, Todd cites a Scandinavian study that suggest that exposure to total VOC concentrations of over 7.8 ppm for fifty minutes or more may be expected to cause toxic effects.

In his analysis, Todd applied a two step methodology: the court will refer to the first step as the subtraction method and the second step as the back-extrapolation method. Todd used his subtraction method to calculate what amount of the VOCs detected in the Heller home in April, 1994 can be attributed to the Newance carpets; Todd then applied his back-extrapolation method to the data obtained from the subtraction method to estimate the levels of VOCs emitted by the Newance carpet when it was installed in the home in December, 1993.

The subtraction method involves the following. On April 14, 1994, Todd Environmental collected an air sample from the closet in Emily's bedroom using an EPA approved collection technique classified as T01. The T01 test equipment extracted ambient air from the closet and passed it through a cartridge in which highly volatile VOCs were trapped on a Tenax resin. After eight hours, Todd removed the cartridge from the sampling equipment and forwarded it to MDS, where the Tenax resin sample was analyzed using the GCMS procedure, in which VOCs were purged from the resin sample with an inert gas and placed in a gas chromatography column at low temperature. The column was then heated and the components eluting were identified by mass spectrometry. The results were depicted on a total ion chromatogram, in which the various peaks readings revealed the presence and amounts of various individual VOCs. On May 5, 1994, Todd Environmental repeated the same tests, only this time using collection method T02, which utilizes a carbon molecular sieve

absorbent instead of a Tenax resin, and which utilizes a different purging technique. Subsequently, comparing the results of the April and May tests, Todd noted that the concentrations in the closet of benzene, 2 Butoxy ethanol and the five benzene homologues had decreased sharply from April to May, 1994. Todd posits that the cause of the decrease in the concentrations of those compounds was the fact that the Newance carpet had in the meantime been removed from the house. Todd notes that no other changes had occurred to the residence between the two tests, and that the house had been empty of occupants. Thus, Todd opines that the concentration of VOCs that can be attributed to the Newance carpets equals the concentrations detected in the April minus the concentrations detected in May. Based on that formula, Todd declares that in April, 1994, the Newance carpeting was responsible for the following concentrations of VOCs in the Heller home: benzene 1.67 ppb; 2 butoxy ethanol 5.52 ppb; and benzene homologues 5.68 ppb.

For the next part of his analysis, Todd calculated VOC levels emitted by the Newance carpet in December, 1993 by back-extrapolating from the April VOC levels. Todd posits that the VOCs in the headspace over the carpet disperse in a geometric progression, i.e., VOC concentrations decrease by one half at regular intervals or half-lives. Todd's postulate is derived from the results of various small and large chamber carpet emission tests. In those tests, researchers placed carpet samples in sealed chambers, passed a known volume of clean air

through the chamber, recollected the air, and measured it for VOC concentrations. Applying known parameters, the researchers then converted the discovered concentrations into rates of emission in milligrams per meter square of carpet per period of time.

Todd asserts that the carpet study tests reveal that emissions of 4 phenylcyclohexane (4-PCH)--the chemical that produces the characteristic new carpet odor--decrease by 50% every eight days. Based on that observation, Todd contends that ambient air concentrations of 4 PCH also decrease in a geometric progression, and that emissions and concentrations of other VOCs decrease in a similar fashion, albeit with differing half-lives.¹² For the purpose of calculating the previous levels for benzene, 2 butoxy ethanol and the benzene homologues, Todd chooses a ten day half-life because although benzene and the benzene homologues are more volatile than 4 PCH and dissipate quicker, 2 butoxy ethanol has a low vapor pressure and is more soluble and, thus, off-gasses at a much slower rate than 4 PCH. Consequently, Todd theorizes that the seven VOCs that he attributes to the Newance carpeting have an average half-life of ten days, i.e., the concentrations of those compounds decreases by 50% every ten days.

Based on his ten day half life theory, Todd calculates that the concentrations of the VOCs detected in April, 1994, and attributed by Todd to the Newance carpet were 4096 times higher

12. Todd also testified at the in limine hearing that benzene levels in the blood stream decrease in a geometric progression.

in December, 1993 because in the 120 day period between December and April, the concentrations of the VOCs went through twelve half-lives, i.e., the concentrations decreased by 50% twelve separate times. Therefore, according to Todd, the levels in December, 1993 were 4096 times higher than in April, 1994; the concentration of benzene in the Heller home was 6,840.32 ppb, the combined concentration of 2 butoxy ethanol and the 5 benzene homologues was 45,875.2 ppb, and the total concentration of all seven VOCs was 52,715.52 ppb.

Finally, Todd opines that the concentrations of VOCs calculated by using his back extrapolation method are sufficiently high to have caused Carol Heller's alleged symptoms because those levels greatly exceeded OSHA and TLV safety standards as modified for residential settings.

After careful consideration of the principles and theories applied by Todd, the court concludes that Todd's opinion is unreliable because the reasoning and methodology underlying his testimony is not scientifically valid. First, neither Todd nor any other researcher has tested Todd's subtraction and back-extrapolation methodologies to see whether the given results are reproducible. See Daubert, 113 S. Ct. at 2796 ("Scientific methodology today is based on generating hypotheses and testing them to see if they can be falsified"). Similarly, Todd's theories have not been published and subjected to peer review. Although publication is not the sine qua non of admissibility, "submission to the scrutiny of the scientific community is a

component of 'good science,' in part because it increases the likelihood that substantive flaws in methodology will be detected." Id. at 2797.

With respect to Todd's subtraction method, Todd did not conduct further tests to ascertain whether changes in the levels of VOCs were attributable to the removal of the carpet or whether the changes were attributable to the natural fluctuation in VOC levels within the home. At the in limine hearing, Todd conceded that the VOC levels detected were close to background rates; Todd testified that the background rate for benzene was 2.0 to 0.5 ppb and, although he has never seen a study of the normal range of benzene, Todd acknowledged that 2.22 ppb was within the normal range for benzene. With respect to 2 butoxy ethanol and the benzene homologues, Todd testified that there is no published study of the background rates, and he has not conducted any tests to determine the background rates of those VOCs. However, in his report, defendant's expert Alfred Hodgson testified that in tests conducted in 12 office buildings in California, the geometric concentration of 2 butoxy ethanol was 1.6 ppb with a geometric standard deviation of plus or minus 3.7 ppb, and the geometric average concentration of benzene was 1 ppb with a standard deviation of 2.7 ppb. (Defend. in limine Hearing Exhib. 23 at 6.) At the in limine hearing, Hodgson opined that the typical range for benzene found within the home is 1 to 3 ppb, and the typical level range for 2 butoxy ethanol is 0.4 to 27 ppb. Defendant's other expert, Ronald E. Gots, testified at the

hearing that the average ambient concentration in the home of benzene ranges from 1.6 to 11 ppb, and of 2 butoxy ethanol ranges from 0.2 to 8 ppb. Those averages are derived from the Environmental Protection Agency (EPA) Total Exposure Assessment Methodology study (Team study),¹³ a 1996 benzene exposure study conducted by Lance Wallace,¹⁴ and the EPA's 1988 National Ambient Volatile Organic Data Base.¹⁵ Here, the Heller home had 2.2 ppb of benzene and 5.6 ppb of 2 butoxy ethanol. Consequently, the VOC concentrations detected by Todd Environmental were all within background ranges.¹⁶

Additionally, Todd did not take any steps to insure that other variables did not effect the air sampling tests. Todd did not measure the air flow or ventilation rates in the closet, no inventory was made of the contents of the closet, and Todd did not personally perform the May, 1994 tests. Further, Todd did not perform any closed chamber tests on a sample of the Newance carpet to verify the source of the VOCs. The American Society for Testing and Materials (ASTM) has validated a procedure for small-scale environmental chamber tests of organic emissions from

13. The TEAM study conducted air monitoring tests for VOCs in 600,000 homes throughout the United States between 1980 and 1987.

14. See Lance Wallace, Environmental Exposure to Benzene: An update, 104 Environ. Health Perspectives Supp. 6 at 1129 (1996) (Defend. in limine Hearing Exhib. 11).

15. That study did not research 2 butoxy ethanol levels.

16. Plaintiffs proffered no evidence with respect to either the background levels or sensory threshold levels for the benzene homologues.

indoor materials and products, designated as ASTM D 5116-90.¹⁷ (Defend. in limine Hearing Exhib. 1.) The use of that procedure would have enabled Todd to measure the exact level of VOC emissions from the carpet and to verify the accuracy of his subtraction method.

Ironically, it is Todd's back extrapolation method that delivers the coup de grace to his subtraction method. Todd posits that the difference in the VOC concentrations in the bedroom closet between April and May, 1994 was caused by the removal of the Newance carpets because everything else in the closet was unchanged. However, according to Todd's back-extrapolation method, in the twenty days between the April and May tests, the amount of VOCs emitted by the carpeting went through two half lives, i.e., the VOC levels were reduced to 25% of previous levels. Thus for benzene, which had a recorded concentration in April of 2.2 ppb., Todd's back-extrapolation method would predict that the recorded concentrations of benzene in May would be 0.55 ppb, even if the carpet was not removed from the home. The exact concentration of benzene detected in May, 1994 was 0.55 ppb. Therefore, Todd cannot claim that the difference in the concentration of benzene between April and May, 1994 is solely attributable to the removal of the Newance carpets

17. In the 1991 Carpet Policy Dialogue Compendium report Discussion draft, the Environmental Protection Agency (EPA) adopted ASTM D5116-90 as the appropriate procedure for testing emissions from carpets. (Defend. in limine Hearing Exhib. 2 at 2.1.)

when, according to Todd's back-extrapolation theory, the difference is attributable to benzene's ten day half-life decay.

Similarly, Todd performed no testing of his back-extrapolation methodology to see if his results are reproducible, Todd has not written up his back-extrapolation method and there is therefore no peer review of his method. Further, Todd testified that to his knowledge no one else has ever tried to use the same method, and that there is no peer review for any four to five month back-extrapolation of carpet emissions.

Moreover, the results from small and large chamber carpet emissions tests undermine the postulates upon which Todd's back-extrapolation method is based. At first blush, it is difficult to determine whether the prior studies corroborate Todd's calculations because Todd's measurements involve VOC concentrations in ppm and ppb, while the carpet emission studies reported their findings as emissions in the metric of milligrams of VOC per meter square of carpet. Even where the carpet studies discussed concentrations, the studies employed the metric of micrograms per cubic meter. Further, there is no published information concerning the half-life of benzene.

Nevertheless, the carpet study results reveal that Todd's half-life theory is not grounded in science in that emissions from carpets do not decrease in a geometric progression over the first four months following installation; rather, carpet VOC emissions decrease rapidly in the first few days, after which the rate of decrease slows until by the fourteenth day after

installation, VOC emissions are at background levels. (Plain. Exhib. 20; Exhib. 36; Exhib. 45.) Professor Alfred T. Hodgson, who has performed closed chamber carpet emission studies at the Indoor Environment Program, Environmental Energy Technology Division, of the Lawrence Berkeley National Laboratories, testified for defendant that although emission rates do decline exponentially if an emitting substance is present and air flow rates are steady, the emitting curve is exponential for a very short time. Hodgson states in his report that "the scientific literature does not support the assumption of an exponential decay for even a period as short as one week."¹⁸ (Defend in limine Hearing Exhib. 23 at 18.) Furthermore, Hodgson testified at the hearing that the same exponential decline phenomena does not apply to VOC concentrations in air. Hodgson explained that emission rates and air concentrations measure different phenomena: emission rates describe the amount of VOCs released from an emitting substance during a stated period of time; air concentrations measure the total number of molecules or the mass of VOCs in a set amount or volume of air. While emission rates initially may be exponential, the same is not necessarily true for air concentrations within a room because air concentrations are largely affected by ventilation rate. Moreover, no chamber emissions studies have ever detected emissions of benzene, 2 butoxy ethanol or benzene homologues in anywhere close to the

18. Todd conceded at the in limine hearing that he had never seen a decay curve for benzene or 2 butoxy ethanol.

levels back-extrapolated by Todd.¹⁹ Consequently, there is no support for Todd's hypotheses that the concentrations of benzene, 2 butoxy ethanol, and the benzene homologues will continue to decrease by 50% every ten days for up to four months after installation.²⁰

A further factor pertinent to reliability is the known or potential rate of error of the method. At the in limine hearing, Todd testified that his estimate of VOC levels for December, 1993 could be off by as much as 100%. Such a margin of error casts further doubt on the reliability of Todd's VOC projections.²¹

19. The 1991 Terra study detected emissions of 2 butoxy ethanol for seven of the eight samples of carpet tested. However, the highest air concentration of 2 butoxy ethanol detected was 4.5 micrograms per cubic meter, or under 1 ppb. (Defend. in limine Hearing Exhib. 14 at A-9.)

. In their reply memorandum to defendant's motion in limine, plaintiffs submit the affidavit of Kenneth P. Reed, Ph.D, who testified that Todd's calculation of the December, 1993 emission levels is valid and that the methodology employed is generally accepted within the scientific community. Reed explains that he used the same methodology when testifying in a similar case in Louisiana state court. Further, Reed makes his own calculation of the VOC concentration in December, 1993; Reed concludes that the concentration of VOCs at the time of installation was 50 milligrams per cubic meter (mg/m³). (Plain. Motion In Limine, Exhib. L at ¶ 6.)

However, the court and not Dr. Reed must decide whether Todd's opinion is reliable, and Reed's conclusory statements add little to an analysis of the validity of Todd's methodology. Moreover, Reed's research and opinions were not relied upon by any of plaintiffs' experts, and plaintiffs did not call Reed to testify at the in limine hearing.

21. Todd has changed his estimate of VOC levels for December, 1993 four times; each time he has greatly increased the size of his estimate. In his initial report, Todd stated that the total
(continued...)

With the exception to Todd's qualifications, the remaining factors for consideration in determining reliability all weigh against admitting Todd's opinion. There is some evidence that Todd's subtraction method is not novel and has non-judicial uses. Todd testified that he has used his subtraction method in EPA air quality compliance test. Similarly, defendant's expert Hodgson, who has previously conducted studies of VOC emissions from carpets in a residential test site, employed a similar subtraction method to distinguishing carpet VOC emissions from VOC background levels. In contrast, however, Todd's back extrapolation method is novel, it has not been put to any non-judicial uses, and there is no evidence of record that Todd's theory is generally accepted by the scientific community.

Even if the court were to admit Todd's testimony regarding post-installation emission rates, Todd's opinion must nevertheless be discarded because Todd offered no support for his contention that benzene, 2 butoxy ethanol or benzene homologues

(...continued)

concentration of VOCs was 20.48 ppb in mid-April, 1994, and that the concentration of VOCs in December, 1993 would have been two fold and more likely 10 fold higher, i.e. approximately 200 ppb or 0.2 ppm. Based on that estimate, Todd concluded that "off-gassing from the Shaw manufactured carpeting installed in the residence in December 1993 was the likely source of the irritation and related responses." (Defend. Exhib. J at 12.) Second, at his first deposition, Todd testified that the December, 1993 levels were 50 to 100 times higher than the levels detected in April, 1994. Third, in Todd's addendum report, Todd stated that the December levels were 1024 times higher than in April. Finally, at the in limine hearing, Todd testified that the December concentrations were 4096 times higher than the April concentrations.

can in general, or in the specific concentrations calculated by Todd, cause the type of illness allegedly experienced by Carol Heller. Plaintiffs' expert Ronald E. Gots, M.D., Ph.D. testifies that benzene does not produce allergies and is not an asthmogenic, except at extremely high levels of hundreds of ppm. (Defend. Exhib. J at 11.) Similarly, plaintiffs offer no proof that 2 butoxy ethanol can cause asthma or allergies.

Todd concedes that the relevant compounds are not allergenic or asthmogenic, but posits that the compounds are irritants when present at sufficiently high levels of exposure. At the in limine hearing, Todd testified that Scandinavian research supports his opinion that the levels of benzene, 2 butoxy ethanol and benzene homologues estimated for December, 1993 are sufficient to have caused Carol's symptoms. In one article, Lars Molhave²²--a professor at the University of Aarhus, Denmark--states that discomfort is expected when total VOC emission levels in a residential setting exceed 3.0 milligrams per cubic meter (mg/m³),²³ and that levels in excess of 8 mg/m³ produce perceived odor and acute irritation. Additionally, Molhave states that exposure to levels of 25 mg/m³ seems to cause

. See Lars Molhave, Volatile Organic Compounds, Indoor Air Quality and Health, Proceedings of 5th International Conference on Indoor Air Quality and Climate (1990) (Plain. Exhib. 17).

. Although Molhave notes that investigations found that complaints seem to be present when VOC concentrations exceed 1.7 mg/m³, in the same paragraph Molhave states that concentrations reported from field investigators were improperly investigated and may be biased. (Plain. Exhib. 17 at 9.)

weak environmental stress symptoms such as headaches and drowsiness, and associated psychological effects like changed performance, confusion, and fatigue. (Plain. Exhib. 17 at 10.) However, Molhave cites total VOCs and not the specific VOCs discussed by Todd. Further, Molhave's article discusses VOC concentrations in milligrams per cubic meter, while Todd's report uses the parts per million/billion scale. In their reply memorandum, plaintiffs have converted Molhave's data into parts per million/billion in order to compare Molhave's limits with Todd's estimates. However, the court is unable to verify the accuracy of plaintiffs' data conversion because plaintiffs have not explained what formula was used.²⁴ Consequently, the threshold limits stated by the Molhave article are not stated in data that have meaning to the issues here.

Additionally, Todd asserts that his estimated VOC levels for December, 1993 exceed the OSHA and TLV standards as modified for residential locations. Todd testified at the in limine hearing that the OSHA permissible exposure level for benzene is 10 ppm, the TLV for benzene is 5 ppm, and the TLV for 2 butoxy ethanol is 25 ppm. (Plain. in limine Hearing Exhib. 14, A Safety Assessment of Carpet Emissions by Terra, Inc. at 7).

. The formula for converting concentrations in parts per million/billion into concentrations in milligrams per cubic meter includes variables for molecular weight, temperature and pressure. Ten parts per million of a hydrocarbon with a low molecular weight weigh less--and therefore measure less in milligrams per cubic meter--than ten parts per million of a hydrocarbon with a higher molecular weight. (See Defend. in limine Hearing Exhib. 23 at 19-20.)

Todd states that these standards were derived for industrial settings, and that to obtain similar standard for residential environments, the PEL and TLV levels must be divided by 100. Todd argues that such an adjustment is accepted practice because individuals spend more time in the home, and because acceptable levels of exposure are lower where the individuals exposed may be elderly, children or pregnant women. Todd opines that his 100 fold adjustment is conservative in that the 1991 Terra study on carpet emissions applied a 420 safety factor to ensure that individuals who may be more sensitive than the normal factory worker are protected. Consequently, Todd believes that the residential TLV for benzene is 50 ppb, and for 2 butoxy ethanol is 250 ppb.

However, the OSHA and TLV standards cited by Todd relate to long term exposure risks. The modified residential TLVs cited in the Terra study are defined as the maximum "concentration of chemical which under continuous exposure conditions is expected to be devoid of all acute and chronic toxicities." (Plain. in limine Hearing Exhib. 14 at 3.) According to Todd's own back-extrapolation estimate, the levels of benzene and 2 butoxy ethanol were above the residential TLVs for only 80 days.²⁵ Moreover, at the in limine hearing, Todd

25. Further, Todd's causation theory does not explain why Thomas and Carol still continued to experience symptoms after the concentration of VOCs declined following the initial period of time after the carpet was installed. Further, Todd's theory does not explain why persons who visited plaintiffs' home in February
(continued...)

conceded that the OSHA and TLV standards do not relate to asthma or allergy, but to long term health risks for cancer and leukemia.²⁶

(...continued)

and March, 1994 allegedly experienced an allergic reaction. Plaintiffs state that Thomas Heller's sister, Patricia Heller, experienced coughing, difficulty breathing, irritation and "feeling like [she] had sand in her lungs[]" when she spent the weekend with plaintiffs at Easter, 1994. Similarly, plaintiffs claim that Dan Smith, who visited the Heller home in February or March, 1994, experienced a burning sensation in his nose, throat and eyes, difficulty breathing and an ill feeling after his visit.

Alternatively, plaintiffs argue that the latex backing in the carpeting became delaminated, producing off-white sandy particles, and that such particles remained in the home after the carpets were removed, thus precipitating plaintiffs' continued allergic reaction. Plaintiffs, however, have failed to proffer evidence that the delamination process produces chemicals harmful to human health. Plaintiffs contend that, "it is well known that the inhalation of latex particles can cause severe asthmatic attacks, sensory irritation and dermatological irritation." (Plain. Memo. in Opp. to S.J. at 17.) As support for that assertion, plaintiffs cite defendant's expert Dr. S. Michael Phillips, M.D. (Plain. Exhib. 15 at 226-31.) However, Phillips specifically states that the particles produced by carpet delamination cannot cause health problems because the particles produced are too large to be absorbed through inhalation. (Id.)

Recently, plaintiffs suggest that Carol experienced symptoms after the carpet had been removed because of the "sink effect" mentioned by Hodgson, who testified at the hearing that surfaces within a room absorb VOCs and re-emit them at a later time. Plaintiffs opine that re-emitted VOCs caused Carol to feel sick when she returned to the home in May, 1994. However, even if some VOCs originally emitted by the carpets were re-emitted by the room surfaces, the May, 1994 air sample tests reveal that after the carpet was removed, VOC concentrations in the home were at background levels, and were too low to have caused any physical effect.

. In addition, plaintiffs have not presented any evidence that the actual levels of VOCs detected in April and May, 1994 exceeded levels harmful to human health.

Consequently, because there are no good scientific grounds to support crucial elements of Todd's opinion, the court will exclude his testimony regarding causation.

ii. Joseph Pappano

Doctor Joseph Pappano opines that VOCs, especially Benzene, produced by the Newance carpets, and detected by Todd Environmental, precipitated Carol's respiratory problems. Pappano deduces that Carol "may have had some mild underlying allergic respiratory problems that were worsened significantly by the presence of the volatile organic compounds coming from the newly installed rugs." (Defend. Exhib. H at 3.)²⁷ Pappano's opinion is based on the temporal relationship of Carol's symptoms to her proximity to the carpeting, and his elimination of other causal factors; Pappano ruled out an infectious cause for Carol's symptoms after reviewing Carol's history and after conducting a physical examination, and Pappano ruled out Carol's allergy to dogs and dust because Carol had not experienced symptoms when previously exposed to those allergens.

27. Pappano testified at the in limine hearing that certain persons are predisposed to allergic reactions and that Carol Heller is one of those persons. Pappano agreed that Carol's sensitivity only causes her symptoms when she is exposed to an agent which irritates her, and only for the time of her expose to the agent. Theurkauf testified that Carol would recover within one day after leaving the house. Hence, even if plaintiffs prove liability, damages would be limited because plaintiffs' injuries ended when the carpet was removed.

Pappano's opinion as to causation, however, suffers from the same defect as Todd's opinion; namely, Pappano cites no research to support his contention that the levels of VOCs detected by Todd Environmental can and did cause the type of illness allegedly experienced by Carol. At the in limine hearing, Pappano acknowledged that he was unaware of the background levels of benzene or any of the other VOCs. In addition, Pappano conceded that he had no authority that states that 2 butoxy ethanol is an irritant and no authority as to the levels of 2 butoxy ethanol required to cause a response.

Further Pappano conducted no differential diagnosis to eliminate all other likely causes, the temporal relationship relied upon by Pappano is not supported by the record, and Pappano conducted no tests to verify that Carol was sensitive to benzene, 2 butoxy ethanol or benzene homologues. In reaching his conclusion, Pappano failed to rule out all alternative possible causes of Carol Heller's illness. The district court may exclude an opinion where (1) the expert engaged in few standard diagnostic techniques normally used to rule out alternative causes and the expert offers no explanation for why his or her opinion remains reliable, or (2) the defendant points to an alternative likely cause for plaintiffs' injuries and the expert offers no reasonable explanation why he or she nevertheless believes that the defendant's action caused the plaintiffs' injuries. See In re Paoli, 35 F.2d at 760 (discussing expert medical testimony). Defendant suggests that other items in the

Heller home could have caused Carol's illness, such as the old carpets, the carpet remnants, the carpet pad or dander from the prior owner's pets. Pappano offers no explanation for why he believes that Carol Heller's illness was caused by the Newance carpets as opposed to those other products.

Similarly, Pappano's opinion contains the premise that all VOCs detected in the April and May, 1994 air ample tests were produced by the Newance carpeting; however, Pappano does not specifically negate the possibility that the VOCs were emitted by other materials located within the home.²⁸ At the in limine hearing, Pappano admitted that other sources in the home could emit benzene and 2 butoxy ethanol, and the record reveals that other items were present within the Heller home that can emit the types of VOCs detected by Todd Environmental in the April and May tests. In correspondence forwarded by Todd to Carol Heller on May 23, 1994, Todd acknowledges that the detected VOCs may have been emitted by a variety of household products. Todd states that many of the hydrocarbons found in Emily Heller's bedroom closet were common to gasoline, and that the levels of Benzene found suggest that the source of that compound was small

. Todd conducted his air sample tests in Emily's bedroom closet, which contained two types of carpeting: the white Newance carpets and a second brand that plaintiffs used in the girls' bedrooms. Carol Heller testified at the in limine hearing that the remnant covered over 60% or more of the closet floor, while the Newance carpet covered 40% or less. There is no evidence of record to link defendant to the remnant carpets in the girls' bedrooms and, consequently, plaintiffs have failed to eliminate a possible alternative source for the VOCs detected by the air sample tests.

equipment or car tanks located in the garage partially below the closet. (Defend. Exhib. M at 2.) Todd also notes that benzene is not used in the manufacture of carpeting, carpet padding, or adhesives used in the installation process. Further, Todd explains that the chlorinated hydrocarbons detected were probably off-gassed from dry cleaning, and that the 2 butoxy ethanol identified in the first sample is a common component of many household cleaners for glass, wood or plastic surfaces. (Id; Defend. Addendum Exhib. E at 110.) Defendant's expert Ronald Gots testified at the in limine hearing that 2 butoxy ethanol is a common cleaning agent used in such products as Windex and Fantastik. Thus, Pappano does not have good grounds for his opinion that the VOC levels detected in the April and May, 1994 air sample tests came from the Newance rugs.

Additionally, there was no significant temporal relationship between Thomas and Carol's symptoms and their exposure to the odors emanating from the Newance Carpeting; plaintiffs proffer no statistical evidence to show the existence of a statistically significant correlation. Moreover, the following incidences disprove the existence of a temporal relationship: (1) although Pappano testified at the in limine hearing that individuals with VOC sensitivity would experience symptoms within 24 hours of exposure, the record reveals that the carpets were installed on December 13-14, 1993 and yet Carol did not experience symptoms until the last week in December,

1993;²⁹(2) Carol and Thomas Heller claim that they continued to experience symptoms after the carpet had been removed from the Heller residence; (3) Thomas Heller received treatment for respiratory illness soon after moving into the Fox Glove home but prior to the installation of the carpets.³⁰

Finally, Pappano did not conduct any tests to verify his conclusion that Carol's symptoms were precipitated by exposure to benzene, 2 butoxy ethanol or benzene homologues. Although pappano conducted skin tests to ascertain whether Carol was allergic to dust and animal dander, he did not attempt to reproduce Carol's reactions by subjecting her to similar tests for low concentrations of VOCs.

Consequently, Pappano's testimony regarding causation is similarly inadmissible.

29. Carol Heller testified at the in limine hearing that her symptoms began to appear in the last week of December, 1993. However, at her deposition, Carol testified that she started to experience symptoms in early January, 1994 after New Year's day. (Plain. Exhib. 1 at 102.) Similarly, Pappano's report states that Carol informed him that she started to experience symptoms in January, 1994. (Defend. Exhib. H at 2.) For the purpose of this motion, the court will accept Carol's testimony that her symptoms first appeared in the last week of December, 1993, i.e., after December 24, 1993. However, because the Newance carpet was installed on December 13-14, 1993, Carol's symptoms appeared over ten days after the installation.

30. At the in limine hearing, Pappano stated that he treated Thomas Heller on December 9, 1993, prior to the Newance carpeting being installed. Thomas informed Pappano that he was suffering from asthmatic conditions brought on by carpet vacuuming, and Pappano concluded that Thomas' symptoms were caused by the cats which the prior owners had in the house.

iii. Julio Amadio

Doctor Amadio testified at his deposition that he diagnosed Carol Heller's breathing difficulties as asthma, and that he determined that the cause of her illness was the new carpet. Amadio claimed that his conclusion was based on his reading of articles that set forth that there could be a direct relationship between carpets and asthma, and his observation that plaintiffs had previously installed new carpets and that Carol's asthma improve when she went out-of-doors. (Plain. Exhib. 6 at 8.)

However, at the in limine hearing, Amadio testified that he was unable to render a definite opinion with a reasonable degree of medical certainty that the Newance carpet caused Carol Heller's respiratory illness. Consequently, while Amadio's testimony is admissible with respect to his asthma diagnosis--in that Amadio observed Thomas and Carol's symptoms and he is competent to render that diagnosis--Amadio's opinion as to whether defendant's rugs caused Carol Heller's symptoms is inadmissible.

iv. Edward Theurkauf

Finally, although plaintiffs state in a reply brief that Doctor Theurkauf attributed Carol's illness to the carpets, the record reveals that Theurkauf offers no opinion as to whether the Newance carpeting caused Carol's symptoms. Rather, at the in limine hearing and at his deposition, Theurkauf merely opined that Carol Heller suffered bronchospasms caused by an

environmental irritant, but that he did not know what environmental irritant was causing her bronchospasms. (Defend. Motion in limine Exhib. K at 4, 7.) Theurkauf testified that he cannot tell whether or not the Newance carpets caused Carol's illness. (Id. at 15.)

Consequently, the opinions of plaintiffs' experts regarding causation are inadmissible, and defendant's motion in limine to exclude will be granted.

C. Summary Judgment Motion

i. Defective Design and/or Manufacture, Failure to Warn; Whether a Defect in the Newance Carpets Caused Plaintiffs Injury

Absent the testimony of their experts, plaintiffs provide no admissible evidence that Carol Heller's injuries were caused by defendant's carpeting. Plaintiffs have failed to present evidence sufficient to establish general or specific causation or to show that the Newance carpets manufactured by defendant were defective. Plaintiffs' remaining evidence is the testimony of Thomas and Carol Heller that Carol experienced asthmatic symptoms when in the Fox Glove residence. However, plaintiffs offer no reasonable scientific explanation for how the carpets caused Carol's symptoms and, as stated above, the temporal relationship between Carol's illness and her proximity to defendant's rugs does not withstand scrutiny; defendant's

carpeting is not the obvious cause of plaintiffs' illnesses because plaintiffs experienced symptoms before and after the carpeting was removed, and because plaintiffs have not ruled out other possible causes of their health problems. Consequently, absent proof of defect or causation, defendant is entitled to summary judgment on plaintiffs' defective design and/or manufacture claim and failure to warn claim.

With respect to plaintiffs' additional claims, defendant contends that plaintiffs have failed to proffer evidence in support of each element of their claims.

ii. Magnuson-Moss Act

Plaintiffs claim damages for breach of warranty pursuant to the Magnuson-Moss Act, 15 U.S.C. § 2310(d). However, the Magnuson Moss Act does not create a private, independent cause of action for personal injury damages arising out of a breach of warranty, absent allegations that defendant violated a specific standard set forth in the Act. See Santarelli v. BP America, 913 F. Supp. 324 (M.D. Pa. 1996); 15 U.S.C. 2311(b)(2) ("Nothing in this chapter (other than [substantive federal warranty standards]) shall (A) affect the liability of, or impose liability on, any person for personal injury, or (B) supersede any provision of state law regarding consequential damages for injury to the person or other injury.") Here, plaintiffs merely

allege a breach of warranty. Further, a plaintiff may not maintain a Magnuson-Moss Act claim unless plaintiffs have given defendant an opportunity to cure the alleged breach of warranty. 15 U.S.C. § 2310(e). Here, there is no dispute that defendant removed the Newance carpets and refunded plaintiffs for the cost of the carpets and installation. Consequently, defendant is entitled to summary judgment on plaintiffs' Magnuson-Moss Act claim.

iii. Negligent and Intentional Misrepresentation

Plaintiffs contend that defendant misrepresented facts concerning prior complaints received by defendant regarding carpet emissions, and that plaintiffs' reliance on defendant's representations caused them to remain in the Fox Glove home for an additional three weeks, thus prolonging their suffering. According to plaintiffs, Carol Heller telephoned defendant on March 21, April 5, and April 28, 1994, seeking information to help her determine the cause of her family's illnesses. Carol Heller testifies that her calls were referred to Todd Bethel, who informed Heller that he had never heard of any complaints of persons having health problems or severe respiratory problems related to new carpets, and that the cause of her family's health problems must be attributable to something else. (Plain. Exhib. 1 at 170-74.) Plaintiffs claim that contrary to his alleged assertion, Bethel was well aware of carpet related health complaints because Bethel was the defendant employee responsible

for handling customer complaints of health problems. Further, plaintiffs note that by January, 1994, 100% of Bethel's time was devoted to handling complaints related to carpet emissions. (Plain. Exhib. 48.) In addition, plaintiffs assert that defendant never sent Carol Heller any information about the health effects of the chemicals emitted from carpeting. (Plain. Exhib. 1 at 199-200.)

Under Pennsylvania law, a cause of action for fraud consists of the following elements: (1) a misrepresentation; (2) a fraudulent utterance thereof; (3) an intention by the maker that the recipient will thereby be induced to act; (4) justifiable reliance by the recipient upon the misrepresentation; (5) damage to the recipient as the proximate result. Woodward v. Dietrich, 548 A.2d 301 (Pa. Super. Ct. 1988). "A 'negligent' misrepresentation is a misrepresentation which arises from a want of 'reasonable care or competence in obtaining or communicating information,' as opposed to a 'fraudulent' misrepresentation which involves either a 'knowing' or a 'reckless' communication of a misrepresentation." Id. at 308 n.5.

Here, a question of fact exists with respect to whether Bethel informed Carol Heller that he was not aware of other health related complaints.³¹ Nevertheless, plaintiffs claim fails because there is no evidence of record to support plaintiffs' assertion that they were injured by reliance on

. In his deposition, Bethel stated that he would not have made such a statement. (Defend. Exhib. J at 59-60.)

Bethel's alleged misrepresentation. The Hellers moved out of the Fox Glove residence on April 7, 1994, and plaintiffs proffer no evidence to prove that they would have moved-out of the Fox Glove residence at an earlier date if they had been aware of the existence of other complaints to defendant. Further, plaintiffs have not substantiated their assertion that they suffered injuries as a consequence of having dwelled in the Fox Glove home for a further three weeks.

iv. Pennsylvania Consumer Protection Laws

Plaintiffs claim that defendant violated the Pennsylvania Unfair Trade Practices and Consumer Protection Laws, 73 P.S. §§ 201 et seq., when it represented that its carpets passed a quality control program. Defendant places a "green tag" on all carpets it sells that pass a CRI inspection test. To qualify for a green tag, a sample from a style of carpet is tested once a year to ensure that total VOC emissions do not exceed a concentration of 0.6 mg/m³. Plaintiff claims that the green tag program is confusing to consumers and lacks credibility in that the emission results for one carpet sample are not indicative of the emissions for all the hundreds of carpets that are in the same category.

"The basic policy of the Pennsylvania Consumer Protection law is to prohibit unfair methods of competition and unfair and deceptive practices in the conduct of a trade or commerce." Rizzo v. Michener, 584 A.2d 973, 980 (Pa. Super. Ct.

1990). To maintain a cause of action under the Pennsylvania Unfair Trade Practices Act, plaintiffs must show the essential elements of fraud: (1) material misrepresentation of a material fact; (2) scienter; (3) intention by the declarant to induce action; (4) justifiable reliance by the party defrauded by the misrepresentation; and (5) damages to the party defrauded as a proximate result. Prime Meats v. Yochim, 619 A.2d 769 (Pa. Super Ct. 1993). Here, plaintiffs have failed to proffer expert testimony that the Newance carpeting manufactured by defendant was defective, or that the green tag Program was confusing or deceptive. Moreover, plaintiffs did not rely on the CRI green tag representation of safety when purchasing the carpets; Carol Heller testified at her deposition that she never saw any green tags on the carpets. (Plain. Exhib. 1 at 172.)³²

v. Medical Monitoring

In their reply brief, plaintiffs indicate that they intend to file a motion to withdraw without prejudice their medical monitoring claim. (Plain. Reply Memo. at 64.) In response, defendant argues that the court should either dismiss that claim with prejudice or grant summary judgment because there is no evidence to support plaintiffs' medical monitoring claim.

. Similarly, to the extent that plaintiffs' complaint alleges a state law breach of warranty claim, that claim fails because plaintiffs offer no admissible evidence that the carpets in their Fox Glove home were defective. See Altronics of Bethlehem, Inc. v. Repco, 957 F.2d 1102, 1105 (3d Cir. 1992) (breach of warranty claim requires proof that product was defective).

Voluntary dismissal at this stage of the proceedings is a matter for the court's discretion. See Sinclair v. Soniform, Inc., 935 F.2d 599, 603 (3d Cir. 1991); Fed. R. Civ. P. 41(a)(2) (after defendant has filed answer, "an action shall not be dismissed at the plaintiff's instance save upon order of the court and upon such terms and conditions as the court deems proper"). In deciding whether to grant a voluntary dismissal, the court may consider the following factors: (1) the excessive and duplicative expense of a second litigation; (2) the effort and expense incurred by defendant in preparing for trial; (3) the extent to which the current suit has progressed; and (4) plaintiffs' diligence in bringing the motion to dismiss. Maleski v. DP Realty Trust, 162 F.R.D. 496 (E.D. Pa.), remanded by Kaiser v. DP Realty Trust, 72 F.3d 123 (3d Cir. 1995). Because of the time and resources already expended by defendant in litigating plaintiffs' medical monitoring claim, and because plaintiffs did not move for a dismissal until after discovery and after defendant moved for summary judgment, the court will deny plaintiffs' request to withdraw their medical monitoring claim without prejudice, and will address the merits of that claim.

In Count VI of the amended complaint, plaintiffs allege that they have been exposed to chemicals known to cause an enhanced risk of contracting latent diseases, and that early and frequent medical monitoring and detection is reasonably available and necessary to protect their health.

To obtain damages for medical monitoring, plaintiffs must establish the following four elements:

1. Plaintiff was significantly exposed to a proven hazardous substance through the negligent action of the defendant.
2. As a proximate result of such exposure, plaintiff suffers a significantly increased risk of contacting a serious latent disease.
3. That increased risk makes periodic examination reasonably necessary.
4. Monitoring and testing procedures exist which make the early detection and treatment of the disease possible and beneficial.

Redland Soccer Club v. Dept. of Army of U.S., 55 F.3d 827, 845 (3d Cir. 1995), cert. denied, 116 S. Ct. 772 (1996). Plaintiffs must prove that they were exposed to chemicals "beyond what would normally be encountered by a person in everyday life, so that the risk of being injured from the exposure is greater, in some way, than the normal risks all of us encounter in our everyday lives." Id. at 846. Additionally, plaintiffs must prove that the increased risks of harm caused by their exposure to toxic substances "warrant a change in the medical monitoring that otherwise would be prescribed for [them]." Id. at 846 (quotation omitted).

Here, plaintiffs have adduced no evidence that defendant's carpets emitted VOCs at concentrations harmful to health, that the levels of VOCs detected by Todd Environmental are higher than the normal background presence, that plaintiffs suffer increased risk of contracting a serious latent disease as a result of their exposure to the levels of VOCs detected by Todd Environmental, or that medical monitoring would be beneficial to

the treatment and early detection of serious latent disease. Consequently, defendant will be granted summary judgment on plaintiffs' medical monitoring claim.

III. CONCLUSION

Defendant's motion in limine to exclude expert testimony and motion for summary judgment will be granted.

An appropriate order follows.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

CAROL HELLER and THOMAS HELLER,	:	CIVIL ACTION
individually and as the parents	:	
and natural guardians of	:	
EMILY and KATHERINE HELLER	:	
Plaintiffs	:	
	:	
v.	:	
	:	
SHAW INDUSTRIES, INC.	:	No. 95-7657
Defendant	:	

ORDER

AND NOW, this day of August, 1997, upon consideration of defendant's motion in limine to exclude expert testimony and motion for summary judgment, and the plaintiffs' responses thereto, **IT IS HEREBY ORDERED** that defendant's motions are **GRANTED**, and judgment is entered in favor of the defendant and against the plaintiffs.

BY THE COURT

William H. Yohn, Jr., Judge