

UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF NEW YORK

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STATE FARM FIRE AND CASUALTY COMPANY,  
a/s/o/ JAMES AND DEBORAH TELBAN,

Plaintiff,

05-CV-6412T

v.

NUTONE, INC.,

Defendant.

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**DECISION  
and ORDER**

### INTRODUCTION

Plaintiff State Farm Fire and Casualty Company ("State Farm") brings this action against defendant Nutone, Inc. ("Nutone") claiming that a combination ceiling fan and light fixture manufactured by Nutone ("the Nutone fan") malfunctioned thereby causing a fire at the home of James and Deborah Telban. State Farm, as subrogee of James and Deborah Telban, seeks damages against Nutone based on theories of strict liability, negligence, failure to warn, and breach of implied warranty.

Defendant Nutone moves to exclude the testimony of plaintiff's expert John Mulcahy ("Mulcahy") on grounds that Mulcahy's testimony is not sufficiently reliable under accepted scientific standards, and therefore is inadmissible at trial. Defendant further contends that if Mulcahy's testimony is excluded, plaintiff's complaint must be dismissed for failure to establish that the defendant's product was the proximate cause of the fire.

## BACKGROUND

James and Deborah Telban ("the Telban's") are the owners of a home located at 89 Lucinda Lane, Rochester, N.Y. ("the Telban home"). The home was built in 1985, and was purchased by the Telban's in 1998. The home has two bathrooms on the upstairs level, one of which is a master bathroom. Each bathroom had an identical combination exhaust fan and light installed in the ceiling, both of which were installed at the time the home was built.

According to James Telban, ("Mr. Telban") on either the evening of July 19, 2002, or the morning of July 20, 2002, he noticed that the fan in the master bathroom was "making a noise," which he further described as a "humming noise." In response to hearing this noise, he turned the fan off and warned his wife not to use the fan because there appeared to be a problem with it.

On July 20, 2002, Deborah Telban ("Mrs. Telban") took two showers in the master bathroom, one in the morning, and one in the afternoon. Mrs. Telban could not recall whether or not she used the fan during either of her showers. Although she stated that it was her habit to turn the fan on, she was unsure as to whether or not she had turned the fan "on" on the day of July 20, 2002.

During the evening of July 20, 2002, a neighbor called the Telban residence and informed Mr. Telban that smoke was coming out of the top of his home. Mr. Telban investigated, and upon entering the master bathroom, found the plastic cover of the light portion

of the exhaust fan melted and on the floor. When he looked up at the fan, he saw flames coming from the area of the fan and rising to the attic.

The Town of Greece Fire Department arrived at the scene and extinguished the fire. Thereafter, investigators Norman Gerhard and Mark Dobner of the Town of Greece Fire Department Fire Investigation Unit investigated the cause of the fire. Officer Gerhard concluded that the fire started above the second-floor master bathroom in the area of the exhaust fan. Officer Gerhard also concluded that the fire originated in the area of the ceiling fan.

Following the fire, State Farm hired investigator Trey Johnson to determine the cause of the fire. Johnson visited the scene of the fire, and following his investigation, concluded that the fire started in the area of the exhaust fan as a result of a malfunction in the fan. State Farm then retained John Mulcahy, a professional engineer who consults with clients as an electrical forensic engineer, to determine whether or not the fan was the cause of the fire. Upon examining the fan, along with the fan found in the other bathroom of the home, and upon reviewing the various fire investigation reports, Mulcahy concluded that "the fire was caused when the motor windings of the exhaust fan became extremely overheated and ignited nearby combustible insulation material." March 22, 2007 Affidavit of John Mulcahy (the "Mulcahy Affidavit") at ¶ 19. More specifically, Mulcahy opined that the motor seized up and stopped turning as a result of a build-up of debris around the

fan. Mulcahy Affidavit at ¶ 21. According to Mulcahy, the seizure of the fan would have caused the motor to overheat. Mulcahy Affidavit at ¶ 25. Mulcahy contends that the heat from the motor caused the debris surrounding the fan to become combustible at a lower temperature than normal (a process referred to as "pyrolysis"), and that a spark (which resulted from a wire becoming dislodged) ignited the material. Mulcahy Affidavit at ¶ 30.

### **DISCUSSION**

#### I. Defendant's Motion to Preclude

Defendant moves pursuant to Rule 702 of the Federal Rules of Evidence to preclude testimony from plaintiffs' expert John Mulcahy on grounds that Mulcahy's opinions are not based on scientific knowledge, but instead are speculative and conclusory, and therefore are inadmissible at trial. Specifically, defendant argues that Mulcahy's testimony is inadmissible because: (1) his conclusions are based on unsupported assumptions; (2) he relies on the discredited theory of "pyrolysis" to explain the origin of the fire at the Telban home; and (3) he failed to perform any testing to validate his theories.

Plaintiff opposes defendant's motion on grounds that there is a valid factual basis for each of Mulcahy's assumptions and that pyrolysis is an accepted theory in the scientific community.

For the reasons set forth below, I find that there is insufficient scientific evidence to support Mulcahy's theory that lint and debris could have caused the fan motor to seize, or that heat from the fan motor could have caused the lint and debris

material that allegedly surrounded the fan to become "pyrolized." Mulcahy may, however, testify that the motor did seize, and that the motor overheated as a result. Similarly, although Mulcahy may not testify as to the alleged pyrolysis of the lint, debris, or insulation surrounding the fan or motor compartment, he may testify that the overheating of the motor combined with a spark caused the material to ignite.

A. Legal standard for determining admissibility of Expert Testimony.

Rule 702 of the Federal Rules of evidence 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, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evidence 702.

The standard for determining whether or not expert scientific testimony may be admitted at trial was set forth in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993). There, the Supreme Court, in analyzing Rule 702, determined that expert testimony which "rests on a reliable foundation and is relevant," is admissible under the Federal Rules. Daubert, 509 U.S. at 597. To determine whether or not expert testimony rests on a reliable foundation, the district court must "make a preliminary assessment of whether the reasoning or methodology underlying the testimony is

scientifically valid and whether that reasoning can be applied to the facts in issue." Daubert, 509 U.S. at 592-93. In assessing whether or not the testimony is scientifically valid, District Courts should examine certain factors such as: (1) whether or not the methodology or theory can be (or 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 for the methodology, and (4) whether or not the theory or methodology is generally accepted in the relevant scientific community. Daubert, 509 U.S. at 593 (rejecting the test enunciated in Frye v. United States, 293 F. 1013 (D.C. Cir. 1923) which relied on whether or not the theory or methodology testified to was generally accepted in the scientific community). The Court emphasized that these factors were not exhaustive nor exclusive, and that courts should be flexible with respect to determining whether or not testimony may be admitted, so long as the expert scientific testimony is pertinent and based on "scientifically valid principles." Daubert, 509 U.S. at 597.

- B. Portions of the proposed testimony by Plaintiff's Expert are not supported by a sufficient scientific basis, and therefore those portions of testimony are not admissible.

In reaching his conclusion that the fire started as a result of a fan malfunction, Mulcahy opined that: (1) the fan was in the "on" position; (2) the motor of the fan was impeded by lint and debris that had accumulated in the motor compartment, causing the motor to seize; (3) the seizing of the motor caused it to overheat; (4) the heat from the motor caused the lint and debris surrounding

the motor to become combustible at a lower temperature than normal for such material; (5) the heat from the motor caused the lint and debris to release combustible gasses; (6) the combustible gasses were ignited by a spark, and (7) the lint and debris material surrounding the motor and fan caught fire, and the fire eventually spread through the attic of the Telban home. I discuss each of these contentions seriatim.

1. Position of the Fan Switch

The defendant contends that Mulcahy's assumption that the fan was "on" at the time the fire occurred is false because there is no evidence in the record to support such an assumption. I find, however, that there is a question of fact as to whether the fan was "on" or "off" prior to or at the time of the fire. While the Telbans testified that they could not recall specifically whether or not the fan was "on" prior to the fire, and Mr. Telban stated that the fan was off when he investigated the source of the smoke reportedly coming from his home, Mrs. Telban stated that it was her habit to turn the fan on, and she believed that she would have turned the fan on during her shower on the afternoon of July 20, 2002. Moreover, the forensic evidence neither confirms nor disproves that the fan was in the "on" position. Accordingly, I find that there is no conclusive evidence in the record that establishes to a certainty whether or not the fan switch was "on" prior to the fire. Therefore, there is some basis for Mulcahy's

assumption that the fan was in the "on" position at the time of the fire.

## 2. Seizure of the Motor

Mulcahy contends that the rotation of the motor was impeded by lint and debris, including pieces of attic insulation, which prevented the motor from turning, thus causing it to overheat. In support of this contention, Mulcahy noted that the same model fan that was installed in the other second-floor bathroom of the house exhibited a build-up of lint and debris in an around the motor compartment. Mulcahy further noted that upon examination of the motor of the fan involved in the fire, while the rotor was able to turn slightly, it could not complete a full revolution.

Defendant contends that there is no evidence supporting plaintiff's theory that the motor seized. Specifically, defendant contends that there is no evidence that lint or debris settled into the motor area of the fan that was subjected to the fire, and no evidence that such material could impede the fan.

Whether or not lint and debris collected in or near the motor area, or between the rotor and the stator of the motor, is a question of fact. Although Mulcahy acknowledged that he found no lint between the rotor and the stator, he did observe lint in the motor compartment (Mulcahy Affidavit at ¶ 16), and residue of burned cellulose material on the motor. Mulcahy Affidavit at ¶ 34. Moreover, because the fan was compromised as a result of the fire

and the removal of the unit from the bathroom ceiling, it is not clear whether or not the rotor's limited range of motion was caused by a build-up of lint and debris, damage resulting from the fire, damage resulting from the removal of the unit from the Telban's home, or some other cause.

Mulcahy's contention, however, that the lint and other material found in the motor compartment could have impeded the motor sufficiently to prevent it from turning, is not based on any scientific or forensic evidence, and accordingly, renders his opinion on this issue unreliable under Daubert. Initially, there is no evidence that lint or debris is capable of impeding the motor at issue. Mulcahy did not test the type of motor used in the defendant's product to determine whether or not lint or debris could impede it. In fact, Mulcahy did not test any similar motor to determine whether or not lint or debris could impede it sufficiently to cause it to stop rotating. Nor has Mulcahy identified any formula under which one could calculate the force or torque generated by the motor, how much resistance would be required to impede it. Mulcahy did not perform any materials testing to determine what the material that allegedly impeded the motor was comprised of, and whether or not the material exhibited the physical properties, such as density and strength, necessary to impede a motor.

Mulcahy further fails to identify how much lint or debris of the type found in the other fan would be required to impede the motor. Though he surmises that "very little" material would be required to impede the motor, there is no scientific basis for this opinion. The term "very little" is not defined, and therefore there is no way of knowing whether or not a sufficient amount of debris could have accumulated in the motor compartment to cause the motor to seize. Additionally, because Mulcahy does not know what the material is comprised of, he can not state with any reliability how much of that material is required to impede the motor. In sum, because Mulcahy's opinion that lint and debris caused the motor to seize is based solely on speculation, and there is no scientific or forensic evidence demonstrating that lint and debris is capable of causing a motor of the type used in the defendant's product to stop turning, Mulcahy's testimony that lint and debris caused the fan to stop turning is inadmissible.

### 3. Overheating of the Motor

Mulcahy opines that the motor overheated because the motor became unable to rotate while electrical power was still being delivered to the motor. Although Mulcahy did not test the motor to determine whether or not it would overheat under such conditions, it is not disputed that a motor could overheat in such conditions, and so I find that there is a valid basis for Mulcahy's opinion on this point.

4. "Pyrolysis" of the Debris surrounding the Motor and fan.

Mulcahy states that overheating of the motor caused the nearby lint and debris to become heated, and that the heating of this material caused it to become "pyrolized." "Pyrolysis" is a theory suggesting that materials can become combustible at a lower temperature than normal if they are subjected to heat over a period of time. Defendant seeks to preclude Mulcahy's testimony with respect to pyrolysis on grounds that the theory of pyrolysis is unproven and not accepted by courts or the scientific community.

While it is true that some courts have found that the theory of pyrolysis to be too speculative to be allowed into evidence through the testimony of an expert witness, (See e.g., Truck Insurance Exchange v. Magnetek, 360 F.3d 1206, 1216 (10th Cir. 2004), other courts both before and after Daubert, have either allowed testimony on pyrolysis, or have recognized the theory in a written opinion, often without comment. See, e.g. Oxford Presbyterian Church v. Weil-McLain Co., Inc., 815 A.2d 1094, 1100 (Pa.Super.,2003) (district court allowed expert testimony on issue of pyrolysis as well as expert testimony opposing the theory); Dieker v. Case Corp., 73 P.3d 133 (Kan.,2003) (allowing expert to testify that pyrolysis of "field trash" would lower the ignition temperature of that material); Industrial Risk Insurers v. West Bend Mut. Ins. Co., 1991 WL 99169 (Wis. App. April 3, 1991) (noting that the parties had conceded that fire had started as a result of

pyrolysis); Howard v. Sears, Roebuck and Co., 437 F.Supp. 883 (D. Miss. 1977) (expert opined that pyrolysis of foam insulation resulted in emission of combustible gasses and combustion of the material). Accordingly, I find that the theory of pyrolysis is neither inherently reliable nor unreliable. Rather, just as with all proposed scientific testimony under Rule 702, the particular theory of pyrolysis in this case must be examined to determine whether or not there is a sufficient scientific basis for allowing the testimony to be given.

Analyzing Mulcahy's proposed testimony under Daubert, I find that there is insufficient scientific grounds for allowing his theory of pyrolysis to be offered at trial. As stated above, Mulcahy has not identified the physical composition of the material that allegedly caused the motor to seize. Because the material has not been identified, it is impossible to know: (a) what the "normal" ignition temperature of the material was; (b) what the ignition temperature after pyrolysis would have been; (c) whether or not the material is capable of being pyrolyzed, and (d) how long the pyrolysis process would take.

While Mulcahy states that he has performed unspecified tests on lint and cellulose, and that he has viewed a demonstration in which "lint/material" allegedly became pyrolyzed, (Mulcahy Affidavit at ¶ 39) there is no evidence in the record to suggest that the materials he tested are similar to or the same as the

foreign materials that were allegedly located in the fan compartment, or that the materials he viewed in the demonstration were the same or similar to the debris that might have been found in the defendant's product. Thus there is no scientific basis for his conclusion that the unidentified material that was allegedly in the motor compartment of the defendant's fan became pyrolyzed.

Additionally, there is no scientific basis to support Mulcahy's opinion that the motor reached a temperature sufficient to cause pyrolysis. Mulcahy did not test any motor to determine what temperature such a motor would reach if it did in fact become overheated. Because he does not know what temperature an overheated motor would reach, and because he does not know at what temperature the lint or debris would become pyrolyzed, he can not say with any reasonable scientific basis that the overheating of the motor caused the debris material to become pyrolyzed.<sup>1</sup>

5. Release of combustible gasses from pyrolyzed material.

Mulcahy opines that pyrolysis of the lint or debris surrounding the motor of the defendant's fan caused the material to release combustible gasses. As stated above, however, the composition of the lint material has never been specifically

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<sup>1</sup>The motor in question contained a thermal control switch which is designed to automatically cut power to the motor if it becomes overheated, and prevent the motor from reaching a dangerous temperature. While Mulcahy suggests, without any evidence, that the control unit malfunctioned, he also contends that even if the control switch did operate properly, the motor could have reached a temperature sufficient to cause pyrolysis. Because, however, Mulcahy did not perform any tests on any motors, either with or without the thermal control switch, there is no scientific basis for this assertion.

identified or tested, and therefore there is no evidence or scientific basis for concluding that the material is capable of emitting combustible gasses even if it could become pyrolyzed.

6. Ignition of Combustible Gasses resulting from a spark.

Mulcahy contends that gasses emitted from pyrolyzed material could have been ignited by a spark caused by a wire disconnecting from the motor. Defendant seeks to preclude such testimony on grounds that there is no evidence that any wire became disconnected from the motor, and therefore Mulcahy's opinion is based solely on conjecture and speculation.

The forensic evidence, however, neither confirms nor disproves the contention that a wire became dislodged thereby creating a spark, and therefore there is no basis on which to preclude Mulcahy's opinion testimony on that limited point. However, because Mulcahy's opinion that combustible gasses were present is not supported by scientific evidence or theory, the issue of whether or not a spark ignited combustible gasses is moot.

7. Ignition of lint and debris, and spread of the fire

Mulcahy opines that the lint and debris surrounding the motor caught fire, and that fire from this material eventually spread to nearby insulation and structural members of the home. The record does not reveal how close the fan was from other combustible material, and therefore there is no basis for knowing whether or not a fire that started in that area could have ignited nearby

material. Nor is there evidence in the record to suggest whether or not the material that allegedly caught fire could burn with a sufficient size, intensity, or duration to migrate to other materials in the attic. But in the absence of evidence demonstrating that a fire starting in fan's motor compartment could not have spread, there is no basis for precluding Mulcahy's testimony. Cf. Howard, 437 F.Supp. at 907 (rejecting opinion of plaintiff's expert that explosion was caused by pyrolysis of insulation material where scientific experimentation by defendant demonstrated that the material in question could not have burned with sufficient intensity to cause such an explosion).

## II. Defendant's Motion for Summary Judgment.

Defendant contends that if the proposed testimony of plaintiff's expert is precluded, then plaintiff's case must be dismissed, as plaintiff will be unable to establish that the Nutone fan was the cause of the fire which resulted in damage to the Telban Home.

Because only portions of Mulcahy's testimony are precluded, I deny defendant's motion for summary judgment. Although Mulcahy may not testify that lint or debris caused the motor to seize, he may testify that the fan seized based on evidence of record including the allegation that prior to the fire, the fan made a humming noise that was consistent with seizure of the fan, and that upon examination of the fan following the fire, it did not rotate. Of

course the defendant may rebut plaintiff's theory, and the evidence upon which it is based, but the evidence nevertheless forms a valid basis for Mulcahy's opinion that the fan seized.

Moreover, although Mulcahy may not testify that pyrolysis occurred with respect to the lint, insulation or other debris in the vicinity of the motor, he may testify, based on the evidence in the record (including burn patterns observed in and near the motor compartment) and his analysis of the evidence, that the overheated motor combined with a spark ignited material in and around the fan, and caused the fire in the Telban home. There is sufficient evidence in the record for Mulcahy to draw such a conclusion, and therefore he may be allowed to testify as to his conclusion that the fire started in the area of the motor compartment as a result of an overheated motor. Further, he may testify as to his opinion that a spark, caused by a loose wire, generated a spark that ignited lint or debris, but he may not testify that the spark ignited gasses.

### III. Breach of Implied Warranty

Defendant moves for summary judgment on plaintiff's claim of breach of implied warranty on grounds that such a claim is barred by the statute of limitations. In light of the defendant's motion, plaintiff has voluntarily withdrawn this claim.

**CONCLUSION**

For the reasons set forth above, defendant's motion to preclude is granted in part and denied in part. Plaintiff's expert John Mulcahy is precluded from testifying on the issue of whether or not lint or debris found in and around the fan caused the fan to seize, and is precluded from testifying as to any aspect of pyrolysis. Defendant's motion for summary judgment is denied.

ALL OF THE ABOVE IS SO ORDERED.

S/ Michael A. Telesca

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MICHAEL A. TELESCA  
United States District Judge

Dated: Rochester, New York  
February 1, 2008