

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ALABAMA  
NORTHEASTERN DIVISION**

**MELISSA ANN BOBO and** )  
**SHANNON JEAN COX, as** )  
**Co-Personal Representatives of the** )  
**Estate of Barbara Bobo, deceased,** )  
 )  
**Plaintiffs,** )  
 )  
**vs.** )  
 )  
**TENNESSEE VALLEY** )  
**AUTHORITY,** )  
 )  
**Defendant.** )

**Civil Action No. CV 12-S-1930-NE**

**MEMORANDUM OPINION**

Barbara Bobo, now deceased, commenced this action during her lifetime. The gravamen of her complaint was that she suffered from malignant pleural mesothelioma as a result of being “wrongfully exposed” to airborne asbestos fibers, “an inherently dangerous toxic substance.”<sup>1</sup> She alleged that the fibers came from the Browns Ferry Nuclear Plant operated by the Tennessee Valley Authority (“TVA”) on the north shore of the Tennessee River near Athens, in Limestone County, Alabama. Mrs. Bobo, however, had never been inside the Browns Ferry Nuclear Plant. In fact, she had never worked for TVA in any capacity. Instead, her claims were derivative: they grew out of her practice of laundering the asbestos-laden work clothes worn by

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<sup>1</sup> Doc. no. 1 (Complaint), ¶ 12; doc. no. 171 (Amended Complaint), ¶ 12.

her husband, James Bobo, every week during the twenty-two years that *he* was employed by TVA as a laborer at its Browns Ferry Nuclear Plant.<sup>2</sup> Such allegations are typical of so-called “secondary exposure,” or “take-home exposure” claims, as distinguished from “direct exposure” claims.<sup>3</sup>

## I. JURISDICTION

Mrs. Bobo’s original complaint asserted claims against TVA and eight other defendants, seven of which had developed, manufactured, marketed, distributed, or sold asbestos-containing products,<sup>4</sup> and one, the Metropolitan Life Insurance

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<sup>2</sup> See doc. no. 171 (Amended Complaint), ¶ 12(a) (alleging that Barbara Bobo’s husband was employed by TVA “from 1975-1997”); doc. no. 174 (Memorandum Opinion and Order), at 3 (observing that the amended complaint expanded the amount of time during which plaintiff alleges that she was exposed to airborne asbestos fibers brought into her home on the person and clothing of her husband, a former TVA employee, from ten to twenty-two years: “that is, from 1975 to 1997, as opposed to the period of 1975 to 1985 alleged in the original complaint”).

<sup>3</sup> In the typical “direct exposure” case, a plaintiff who works with or around products containing asbestos alleges that manipulation of the products caused asbestos fibers to become airborne and inhaled; and, that, following a long latency period, the ingested fibers caused an aggressive form of cancer called mesothelioma. In contrast, the plaintiff in a “secondary,” or “take-home,” exposure case does not personally work with or around asbestos-containing products. Instead, such plaintiffs typically are family members like Mrs. Bobo, who wash the clothes of the laborer in direct contact with the asbestos-containing products. (Such cases sometimes are referred to as “bystander exposure” claims.)

<sup>4</sup> The seven defendants that developed, manufactured, marketed, distributed, or sold asbestos-containing products were: (i) Agco Corporation, *formerly known as* Allis Calmers Company, and *sued as successor to* Massey Ferguson Limited (“Agco”) (doc. no. 1 (Complaint), ¶ 3); (ii) CBS Corporation, *formerly known as* Viacom, Inc., and *sued as the successor-by-merger to* CBS Corporation, *formerly known as* Westinghouse Electric Corporation (“CBS”) (*id.* ¶ 4); (iii) Conopco, Inc., *doing business as* Unilever United States, Inc., and *sued both individually, and, as successor-by-merger to* Helene Curtis Industries, Inc. (“Conopco”) (*id.* ¶ 5); (iv) Consolidated Aluminum Corporation, *also known as* Conlaco, Inc. (“Consolidated Aluminum”) (*id.* ¶ 6); (v) Dana Companies LLC, *sued both individually, and, as successor-in-interest to* Victor Gasket Manufacturing Company (“Dana”) (*id.* ¶ 7); (vi) Ford Motor Company (“Ford”) (*id.* ¶ 8); and (vii) Unilever United States, Inc.,

Company, that allegedly had “conspired with other asbestos suppliers and product manufacturers to mislead the public as to the hazards of asbestos.”<sup>5</sup> Mrs. Bobo was a resident of the State of Alabama on the date this action was commenced, and the defendants other than TVA were corporate citizens of states other than Alabama. Apparently for that reason, Mrs. Bobo’s attorneys premised jurisdiction on the diversity statute, 28 U.S.C. § 1332.<sup>6</sup> Mrs. Bobo’s claims against the eight, non-TVA defendants were dismissed at various stages of these proceedings pursuant to stipulations for dismissal,<sup>7</sup> thus leaving TVA as the only defendant. TVA’s status as a wholly-owned corporate agency and instrumentality of the United States created pursuant to an act of Congress<sup>8</sup> places subject matter jurisdiction under the federal question statute, 28 U.S.C. § 1331, as opposed to the diversity statute. *See, e.g.,*

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*sued both individually, and, as successor-by-merger to Helene Curtis Industries, Inc. (“Unilever”) (id. ¶ 11).*

<sup>5</sup> Doc. no. 1 (Complaint), ¶ 9.

<sup>6</sup> *See id.* ¶¶ 18-20; *see also* doc. no. 171 (Amended Complaint) ¶¶ 18-20.

<sup>7</sup> The following defendants were dismissed in accordance with stipulations of dismissal filed by Mrs. Bobo and the defendants noted: doc. no. 18 (Ford); doc. no. 19 (Order Dismissing Ford); doc. no. 44 (AGCO); doc. no. 45 (Order Dismissing AGCO); doc. no. 47 (Conopco and Unilever); doc. no. 48 (Order Dismissing Conopco and Unilever); doc. no. 53 (Consolidated Aluminum); doc. no. 56 (Order Dismissing Consolidated Aluminum); doc. no. 60 (CBS); doc. no. 61 (Order Dismissing CBS); doc. no. 62 (Dana Companies); doc. no. 64 (Order Dismissing Dana Companies); doc. no. 78 (MetLife); doc. no. 79 (Order Dismissing MetLife).

<sup>8</sup> *See* 16 U.S.C. § 831 (creating “a body corporate by the name of the ‘Tennessee Valley Authority’”); § 831r (referring to TVA as “an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers”). *See also, e.g., United States ex rel TVA v. An Easement & Right-of-Way Over Two Tracts of Land*, 246 F. Supp. 263, 269 (W.D. Ky. 1965) (observing that TVA “is a wholly owned corporate agency and instrumentality of the United States”) (citations omitted), *aff’d*, 375 F.2d 120 (6th Cir. 1967).

*Union Pacific Railroad Co. v. Myers*, 115 U.S. 1, 11 (1885) (the so-called “Pacific Railroad Removal Case,” holding that a suit by or against a corporation of the United States is a ground for federal question jurisdiction); *Government National Mortgage Association v. Terry*, 608 F.2d 614, 620-21 & n.10 (5th Cir. 1979) (same);<sup>9</sup> *Jackson v. Tennessee Valley Authority*, 462 F. Supp. 45, 50-51 (M.D. Tenn. 1979) (“The courts have consistently relied upon the Pacific Railroad decision in finding jurisdiction over tort actions against TVA under sections 1331 and 1337”) (citations omitted); *Monsanto Co. v. Tennessee Valley Authority*, 448 F. Supp. 648, 651 (N.D. Ala. 1978) (observing that “the precedents going back over a hundred and fifty years establish that any claim, *even one created by state law*,<sup>[10]</sup> against a federally created corporation arises under federal law”) (emphasis and footnote supplied, citations

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<sup>9</sup> The Eleventh Circuit adopted as binding precedent all decisions of the former Fifth Circuit handed down prior to the close of business on September 30, 1981, in *Bonner v. City of Prichard*, 661 F.2d 1206, 1209 (11th Cir. 1981) (*en banc*).

<sup>10</sup> With regard to the statement that any claim, “even one created by state law,” that is asserted against a federally-created corporation “arises under federal law,” see 16 U.S.C. § 831c-2, providing that:

An action against the Tennessee Valley Authority for injury or loss of property, or personal injury or death arising or resulting from the negligent or wrongful act or omission of any employee of the Tennessee Valley Authority while acting within the scope of this office or employment is exclusive [*sic*] of any other civil action or proceeding by reason of the same subject matter against the employee or his estate whose act or omission gave rise to the claim. Any other civil action or proceeding arising out of or relating to the same subject matter against the employee or his estate is precluded without regard to when the act or omission occurred.

16 U.S.C. § 831c-2(a)(1).

omitted).

## II. PROCEDURAL HISTORY

Mrs. Bobo died about fifteen months after filing suit,<sup>11</sup> but her claims were not extinguished by death, and survived in favor of her daughters, who were appointed co-personal representatives of their mother's estate by the Probate Court of Lauderdale County, Alabama.<sup>12</sup> A timely motion to substitute Melissa Ann Bobo and Shannon Jean Cox as plaintiffs was granted pursuant to Federal Rule of Civil Procedure 25(a)(1).<sup>13</sup>

Following denial of TVA's motions for summary judgment,<sup>14</sup> the case proceeded to a bench trial<sup>15</sup> on plaintiffs' claims that their mother had contracted malignant plural mesothelioma as a result of TVA's negligence that allowed her to

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<sup>11</sup> See, e.g., doc. no. 201 (Agreed and Stipulated Facts), ¶ 10.

<sup>12</sup> See Ala. Code § 6-5-462 (1975) ("In all proceedings not of an equitable nature, all claims upon which an action has been filed and all claims upon which no action has been filed on a contract, express or implied, and all personal claims upon which an action has been filed, except for injuries to the reputation, survive in favor of and against personal representatives; and all personal claims upon which no action has been filed survive against the personal representative of a deceased tort-feasor."); doc. no. 178-1 (Letters Testamentary, *In re Estate of Barbara J. Bobo*, Case No. 20091, Probate Court for Lauderdale County, Alabama).

<sup>13</sup> See doc. no. 178 (Motion to Substitute Party), and doc. no. 179 (Order Granting Motion to Substitute Party).

<sup>14</sup> See doc. no. 69 (TVA's Motion for Summary Judgment on Discretionary Function Grounds), *granted in part and denied in part by* doc. no. 174 (Memorandum Opinion and Order); *see also* doc. no. 122 (TVA's Motion for Summary Judgment), *denied by* doc. no. 187 (Memorandum Opinion and Order).

<sup>15</sup> See doc. no. 65 (TVA's Motion to Dismiss Punitive Damages Claims and to Strike Jury Demand), *granted by* doc. no. 75 (Memorandum Opinion and Order).

be exposed to a large quantity of asbestos fibers while laundering the work clothing of her husband each week throughout the years he worked at TVA's Browns Ferry Nuclear Plant.<sup>16</sup> Upon consideration of the parties' pleadings, pre-trial evidentiary submissions, trial testimony and exhibits, briefs, arguments of counsel, and independent research, the court makes the following findings of fact and enters conclusions of law.

### III. FINDINGS OF FACT

Plaintiffs' decedent, Barbara Wear Bobo, was born on March 3, 1942, and lived with her father, Clifton Wear, on the family farm until she married James Bobo on September 28, 1964.<sup>17</sup> They purchased a home in Florence, Alabama the following year,<sup>18</sup> and lived together as husband and wife until Mr. Bobo died on

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<sup>16</sup> See doc. no. 191 (Pretrial Order), ¶ 5(b), at 5-6. See also doc. no. 174 (Memorandum Opinion and Order Denying TVA's Motion for Summary Judgment), at 56 (permitting the case to proceed on the claim that TVA was negligent in at least the following respects: (1) TVA violated Occupation Safety and Health Administration regulations concerning permissible levels of asbestos exposure; (2) TVA failed to follow mandatory directives governing the monitoring of an employee's exposure to asbestos; (3) TVA failed to provide employees who were exposed to airborne asbestos fibers protective clothing and equipment, as well as separate locker rooms and shower facilities; and (4) TVA failed to administer annual medical examinations to employees exposed to airborne asbestos fibers).

<sup>17</sup> Doc. no. 83-1 (Barbara Bobo's Sept. 25, 2012 Deposition), at 11; doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 5, 12(b). James Bobo sometimes was referred to during his lifetime and pleadings in this case as "Neal Bobo."

<sup>18</sup> Doc. no. 123 (Barbara Bobo's May 30, 2013 Deposition), at 16; doc. no. 201 (Agreed and Stipulated Facts), ¶ 6.

September 7, 1997,<sup>19</sup> from lung cancer induced by asbestosis:<sup>20</sup> “a form of pneumoconiosis (silicatosi) caused by inhaling fibers of asbestos” and “associated with pleural mesothelioma.”<sup>21</sup>

Mrs. Bobo did not remarry and continued to reside in the marital home until her own death.<sup>22</sup> She was diagnosed with malignant pleural mesothelioma in November of 2011, and died as a result of that disease nearly two years later, on September 7, 2013.<sup>23</sup> She was seventy-one years of age.<sup>24</sup>

Defendant, Tennessee Valley Authority (“TVA” or “the Authority”), is a constitutionally authorized instrumentality of the United States created pursuant to the Tennessee Valley Authority Act of 1933, 16 U.S.C. § 831 *et seq.* (“the TVA Act”), which broadly charges the Authority with the accomplishment of several important missions, including: improving the navigability of the Tennessee River and

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<sup>19</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 9.

<sup>20</sup> *See* doc. no. 145-3 (James Bobo Deposition) at 59, 70-71; Trial Transcript, Day 1, at 181 (ll 9-14).

<sup>21</sup> *Dorland’s Illustrated Medical Dictionary* 161 (30th ed. 2003) (The entire definition of asbestosis reads as follows: “a form of pneumoconiosis (silicatosi) caused by inhaling fibers of asbestos, marked by interstitial fibrosis of the lung varying in extent from minor involvement of the basal areas to extensive scarring; it is associated with pleural mesothelioma and bronchogenic carcinoma”).

<sup>22</sup> *See* doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 16-17, 29-30; doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 9-10.

<sup>23</sup> Doc. no. 178 (Motion to Substitute Party); doc. no. 179 (Order Granting Motion to Substitute Party); doc. no. 201 (Agreed and Stipulated Facts), ¶ 10.

<sup>24</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 67.

its tributaries; flood control; improvement of marginal lands; reclamation of lands ravaged by erosion; reforestation; and agricultural and industrial development of the region served by TVA — an area of the nation that was particularly affected by the Great Depression, and which covers most of Tennessee, portions of Alabama, Mississippi, and Kentucky, and small slices of Georgia, North Carolina, and Virginia.<sup>25</sup> To assist in the accomplishment of its Congressionally-mandated purposes, the TVA Act specifically authorizes the Authority “to acquire real estate for the construction of dams, reservoirs, transmission lines, power houses, and other structures, and navigation projects at any point along the Tennessee River, or any of its tributaries,”<sup>26</sup> and “[t]o produce, distribute, and sell electric power.”<sup>27</sup> All real property acquired by TVA is held “in the name of the United States of America,” and is “entrusted to the [Authority] as the agent of the United States to accomplish the purposes of the [TVA Act].”<sup>28</sup>

The land upon which the Browns Ferry Nuclear Plant was constructed is among the real estate owned by the United States and entrusted to TVA for management and

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<sup>25</sup> See 16 U.S.C. § 831n and § 831n-4. See also, e.g., doc. no. 201 (Agreed and Stipulated Facts), ¶ 12.

<sup>26</sup> 16 U.S.C. § 831c(i).

<sup>27</sup> 16 U.S.C. § 831d(l) (alteration supplied). See also 16 U.S.C.A. § 831h-1; doc. no. 201 (Agreed and Stipulated Facts), ¶ 13.

<sup>28</sup> 16 U.S.C. § 831c(h) (alterations supplied). See also doc. no. 201 (Agreed and Stipulated Facts), ¶ 14.

operational control.<sup>29</sup> The Browns Ferry facility was the Authority's first nuclear power plant and, when it began operation in 1974, the largest in the world. It also was the first nuclear plant to generate more than one billion watts of electric power.<sup>30</sup> The plant's three operating units are General Electric boiling water reactors. They produce electricity by splitting uranium atoms, and the heat generated by that process boils water, thereby producing steam that is piped to turbines, which in turn spin generators to produce electricity.<sup>31</sup>

#### **A. Asbestos**

The Toxic Substances Control Act of 1976, 15 U.S.C. § 2641 *et seq.*, defines asbestos as the asbestiform varieties of chrysotile (serpentine), crocidolite (riebeckite), amosite (cummingtonite-grunerite), anthophyllite, tremolite, or actinolite. 15 U.S.C. § 2642(3)(A)–(F). “Asbestiform” is a mineralogical term

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<sup>29</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 15; doc. no. 31 (TVA Answer), ¶ 10.

<sup>30</sup> TVA intended to construct seventeen nuclear reactors during the 1950s and '60s, but completed only five. The plans for the Browns Ferry facility were approved by the Nuclear Regulatory Commission on June 17, 1966; construction began in September of that year; and the plant became operational in 1974. *See, e.g.*, <https://www.tva.gov/Energy/Our-Power-System/Nuclear/Browns-Ferry-Nuclear-Plant> (last visited Sept. 29, 2015). As of the date of this opinion, TVA operated six nuclear reactor units at three sites: three at Browns Ferry; two at the Sequoyah Plant in Soddy-Daisy, Tenn.; and one at the Watts Bar Plant near Spring City, Tenn. (a second unit is under construction). Together, those plants contribute about 6,600 megawatts of electricity to the power grid, and generate about 30% of TVA's power supply. Those plants alone make enough electricity to power more than three million homes in the Tennessee Valley, thereby making the “Nuclear Power Group” an integral part of TVA's seven-state power system. *See* <http://www.tva.com/power/nuclear/index.htm> (last visited Sept. 29, 2015).

<sup>31</sup> *See, e.g.*, <http://www.tva.gov/sites/brownsferry.htm> (last visited Sept. 23, 2015).

meaning that the fibers are long, thin, and possess high tensile strength.<sup>32</sup> Asbestos fibers are flexible, and can be woven together. They also are resistant to heat and most chemicals. “Because of these properties, asbestos fibers have been used in a wide range of manufactured goods, including roofing shingles, ceiling and floor tiles, paper and cement products, textiles, coatings, and friction products such as automobile clutch, brake and transmission parts.”<sup>33</sup> The use most relevant to the issues of this case was the installation or replacement of insulation materials wrapping the boilers, pipes, and other equipment involved in the transfer of high-temperature steam to the turbines driving TVA’s electrical generating equipment.

#### **B. James Bobo’s Pre-TVA Employment and Exposure to Asbestos**

Barbara Bobo’s husband James was employed as a machine operator at the “Alabama Wire” plant in Florence, Alabama for about ten years, from 1965 until April 15, 1975, when he was hired by TVA.<sup>34</sup> During that period, he was exposed to airborne asbestos fibers that emanated from such products as: Careytemp pipe covering, insulating cement, and block insulation;<sup>35</sup> GAF Building Materials

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<sup>32</sup> See [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=PREAMBLES&p\\_id=785](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=PREAMBLES&p_id=785) (last visited Sept. 17, 2015).

<sup>33</sup> [http://www.epa.gov/superfund/asbestos/compendium/basic\\_information.html](http://www.epa.gov/superfund/asbestos/compendium/basic_information.html).

<sup>34</sup> Doc. no. 123 (Barbara Bobo’s May 30, 2013 Deposition), at 52-70.

<sup>35</sup> Doc. no. 123-2 (Barbara Bobo Declaration in Support of Exposure to Celotex Corporation Asbestos-Containing Products), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 16-17.

Corporation pipe covering, insulating cement, and block insulation;<sup>36</sup> H.K. Porter cloth;<sup>37</sup> Kaiser Aluminum & Chemical Corporation block insulation;<sup>38</sup> Keene Corporation pipe covering, insulating cement, and block insulation;<sup>39</sup> and Raymark gaskets.<sup>40</sup>

### C. James Bobo's TVA Employment and Exposure to Asbestos

James Bobo was employed by TVA as either a temporary or annual employee for more than twenty-two years, from April 15, 1975 until September 7, 1997:<sup>41</sup> the day on which he died from lung cancer induced by asbestosis.<sup>42</sup> He worked primarily

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<sup>36</sup> Doc. no. 123-3 (Barbara Bobo Declaration in Support of Exposure to GAF Building Materials Corporation Asbestos Related Products), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶ 17.

<sup>37</sup> Doc. no. 123-4 (Barbara Bobo Declaration in Support of Exposure to H.K. Porter Asbestos Related Products), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶ 17.

<sup>38</sup> Doc. no. 123-5 (Barbara Bobo Declaration in Support of Exposure to Kaiser Aluminum & Chemical Corporation Asbestos Related Products), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶ 17.

<sup>39</sup> Doc. no. 123-6 (Barbara Bobo Declaration in Support of Exposure to Keene Corporation Asbestos Related Products), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶ 17.

<sup>40</sup> Doc. no. 123-7 (Barbara Bobo Declaration in Support of Exposure to Raymark Asbestos Related Products), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶ 17.

<sup>41</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 28; doc. no. 83-3 (Exhibits to Priscilla Carthen Deposition), at ECF 24. **NOTE:** "ECF" is an acronym formed from the initial letters of the name of a filing system that allows parties to file and serve documents electronically (*i.e.*, "Electronic Case Filing"). Bluebook Rule 7.1.4 allows citation to page numbers generated by the ECF header. *The Bluebook: A Uniform System of Citation*, at 21 (Columbia Law Review Ass'n *et al.* eds., 19th ed. 2010). Even so, the Bluebook recommends against citation to ECF pagination in lieu of original pagination. Consequently, unless stated otherwise, this court will cite to the original pagination in the parties' pleadings. When the court cites to pagination generated by the ECF header, it will, as here, precede the page number with the letters "ECF."

<sup>42</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 9; *see also* notes 19-21, *supra*, and accompanying text.

in the Browns Ferry Nuclear Plant.<sup>43</sup> Numerous products and materials containing asbestos fibers were present in that facility:<sup>44</sup> for example, thermal pipe coverings and insulation; roofing cement; packing materials; and gasket packing materials.<sup>45</sup> Even so, there is no record of air monitoring measurements demonstrating either the fact of Mr. Bobo's exposure to airborne asbestos fibers during his TVA employment, or the extent of any such exposure in some objectively measurable units.<sup>46</sup>

Mr. Bobo held at various times job positions classified as "laborer," "dual rate laborer foreman," and "laborer foreman."<sup>47</sup> He never held jobs classified as either "asbestos worker" or "insulator."<sup>48</sup>

Mr. Bobo's duties while working as a "laborer" included, among other things, general clean-up work, tool decontamination, and the packing and storing of radiological waste.<sup>49</sup> Moreover, he often was directed to assist TVA employees who

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<sup>43</sup> Doc. no. 83-3 (Exhibits to Priscilla Carthen Deposition), at ECF 24; doc. no. 201 (Agreed and Stipulated Facts), ¶ 28.

<sup>44</sup> Doc. no. 175 (Answer to Amended Complaint), ¶ 10; doc. no. 201 (Agreed and Stipulated Facts), ¶ 31.

<sup>45</sup> Doc. no. 83-2 (James Bobo Deposition), at 34-35. TVA's 1967 Safety Manual noted that asbestos thermal insulation was used at the plant and that "[e]xposures occurre[d] during application and removal of insulation." Doc. no. 91-1, at ECF 5 (alterations supplied).

<sup>46</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 32.

<sup>47</sup> *Id.* ¶ 33.

<sup>48</sup> *Id.* ¶ 34.

<sup>49</sup> *Id.* ¶ 35.

installed insulation materials made from (or that contained) asbestos fibers.<sup>50</sup> Occasionally, he would assist the insulators in such work; but, more often than not, Mr. Bobo was directed to clean up after the insulators had completed their duties by sweeping insulation residue that had fallen to the floor.<sup>51</sup> The act of sweeping generated airborne “dust” containing asbestos fibers.<sup>52</sup> Mr. Bobo was often present when insulators mixed refractory cement,<sup>53</sup> a process that also generated airborne asbestos fibers.

Mr. Bobo worked at various times in parts of the nuclear facility that contained radiologically contaminated materials: areas that are referred to in this record as “C-Zones.”<sup>54</sup> Whenever Mr. Bobo did so, he was required to wear personal protective gear — *i.e.*, clothing and equipment worn to prevent or mitigate exposure to radiation and radiological contamination.<sup>55</sup> Whenever Mr. Bobo swept insulation residue that

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<sup>50</sup> Doc. no. 83-2 (James Bobo Deposition), at 36.

<sup>51</sup> *Id.* at 36-38. Laborers cleaned up the insulation residue using brooms, rags, and mops. Doc. no. 83-4 (Jimmy Myhan Deposition), at 60.

<sup>52</sup> Doc. no. 83-2 (James Bobo Deposition), at 34, 100, 109; doc. no. 83-4 (Jimmy Myhan Deposition), at 61.

<sup>53</sup> Doc. no. 83-2 (James Bobo Deposition), at 144-45, 147.

<sup>54</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 36.

<sup>55</sup> *Id.* ¶ 37 (“Mr. Bobo was required to wear over-garment protection while working in C-Zones for purposes of preventing personal radiological contamination.”). *See also, e.g.*, U.S. Dept. of Health & Human Services website on “Radiation Emergency Medical Management,” found at [http://www.remm.nlm.gov/radiation\\_ppe.htm](http://www.remm.nlm.gov/radiation_ppe.htm) (last visited June 12, 2015). The term *contamination* refers to particles of radioactivity deposited where they are not supposed to be. *See, e.g.*, <http://nuclear.duke-energy.com/2012/08/21/radiation-protection-for-nuclear-employees> (last visited Sept. 29, 2015).

was not in a C-Zone, however, he wore only street clothes, with no over-garment protective coverings,<sup>56</sup> even though such gear would have prevented airborne asbestos fibers from adhering to and contaminating his personal clothing.<sup>57</sup> Mr. Bobo's clothing always was clean when he departed his residence for work each morning, but the same garments generally were "pretty dirty" when he returned home.<sup>58</sup>

Jimmy Myhan was a TVA employee who worked with James Bobo at Browns Ferry from March 16, 1976 until October 1, 1993, except for a two-year time period between October 1978 and August 1980, when Myhan left TVA for other employment.<sup>59</sup> Mr. Myhan testified that, during both periods he and James Bobo worked together — *i.e.*, 1976-78, and, 1980 through 1993 — James Bobo worked at least once each week in a C-Zone, and at all other times he worked in one of the three units of the nuclear plant where he cleaned up *white* pipe insulation.<sup>60</sup> Mr. Myhan's description of the insulation as "white" in color is significant, because heat-absorbing materials made from (or containing) asbestos fibers generally are "white" in color. For example, Frank Mecke testified that the contractor he worked for during construction of the Browns Ferry facility (Shook & Fletcher) installed all insulation

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<sup>56</sup> Trial Transcript, Day 2, at 13-16.

<sup>57</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 38.

<sup>58</sup> Trial Transcript, Day 2, at 28-29, 136-37.

<sup>59</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 29-30.

<sup>60</sup> Trial Transcript, Day 2, at 11-16.

in the Unit 1 reactor,<sup>61</sup> and that the insulating materials made from (or containing) asbestos fibers were *white* in color.<sup>62</sup> In like manner, Steven Brown, Director of Maintenance at the Browns Ferry Nuclear Plant, testified that all asbestos insulation removed during abatement procedures was *white* in color, and that he encountered asbestos insulation at the nuclear plant on a daily basis.<sup>63</sup> Indeed, TVA's own documentation confirms that asbestos insulation was used pervasively throughout the Browns Ferry Nuclear Plant, including the three reactor units in which Mr. Bobo worked.

A list of TVA employee fatalities shows that, in 1977, a labor foreman (a position sometimes held by Mr. Bobo) died of asbestosis, and an electrician foreman died of mesothelioma.<sup>64</sup> A 1978 internal memorandum notes that an evaluation of the Browns Ferry insulator shop revealed the presence of airborne asbestos fibers.<sup>65</sup> A 1979 evaluation of TVA facilities by the Occupational Safety and Health Administration noted that "asbestos exposure at numerous power plants" was one of "[a] number of recognized and documented hazards within TVA [that] have been

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<sup>61</sup> The operating license for the Unit 1 reactor was issued by the U.S. Nuclear Regulatory Commission on Dec. 20, 1973, and a renewal license issued on May 4, 2006. The current licence is due to expire on Dec. 20, 2033. See <http://www.nrc.gov/info-finder/reactor/bf1.html> (last visited June 12, 2015).

<sup>62</sup> Trial Transcript, Day 1, at 163-67.

<sup>63</sup> Trial Transcript, Day 3, at 12-13, 21.

<sup>64</sup> Plaintiffs' Exhibit 531, at 5.

<sup>65</sup> Plaintiffs' Exhibit 530.

known to exist for years and [were] still not abated.”<sup>66</sup> A 1980 draft of TVA’s “Hazard Control Standard 407” for asbestos allowed the purchase of asbestos insulation, but only if no suitable, non-toxic substitute existed. It also required non-asbestos materials to be designated as such, and required warning signs to be posted in areas where airborne asbestos fiber concentrations might exceed the permissible exposure level.<sup>67</sup> A 1988 “Asbestos Control Program Review Report” stated that “*all insulation (usually gray) is [to be] treated as asbestos unless bulk sample analysis indicates otherwise,*” and noted that “insulation containing asbestos was sometimes substituted in some areas being insulated with asbestos-free insulation during construction.”<sup>68</sup> Even though air monitoring measurements were usually obtained after wet methods had eliminated most of the airborne dust, elevated levels of asbestos fibers still were detected in every reactor unit of the plant.<sup>69</sup> Finally, even though non-asbestos “mineral wool” was sometimes used during construction of the Browns Ferry Nuclear Plant, it was covered (encased) with asbestos mud and asbestos cloth.<sup>70</sup>

The preponderance of the evidence presented at trial established that a

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<sup>66</sup> Plaintiffs’ Exhibit 531, at 45 (alterations supplied).

<sup>67</sup> Plaintiffs’ Exhibit 533, at 3, 9.

<sup>68</sup> Plaintiffs’ Exhibit 536, at 4 (emphasis and alteration supplied).

<sup>69</sup> Plaintiffs’ Exhibit 543; Trial Transcript, Day 2, at 57-59.

<sup>70</sup> Trial Transcript, Day 1, at 164.

significant quantity of asbestos fibers accumulated on the clothing worn by Mr. Bobo when he swept insulation residue in the non-C-Zone areas of all reactor units at the Browns Ferry Nuclear Plant.

**D. Barbara Bobo’s Exposure to Airborne Asbestos Fibers That Originated From Sources Other Than TVA’s Browns Ferry Nuclear Plant**

Barbara Bobo, like many Americans above the age of sixty, probably was exposed to products containing some amount of asbestos at various times throughout her life.<sup>71</sup> Plaintiffs’ counsel admitted that she experienced non-occupational exposures to asbestos from 1965 until April 15, 1975, when her husband was employed as a machine operator at the Alabama Wire plant, through laundering his work clothes and traveling in the family automobile.<sup>72</sup> Her exposures to asbestos-containing products during that period, however, occurred thirty-five to forty-five

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<sup>71</sup> For example, it was alleged in both complaints filed in the present action that Barbara Bobo was exposed to “asbestos-containing friction products” during the decades of the 1940s and 1950s as a result of “observing her Father, who worked as a farmer, performing maintenance to his tractors.” Doc. no. 1 (Complaint), ¶ 12(b), and doc. no. 171 (Amended Complaint), ¶ 12(b). *See also* Rebecca Leah Levine, *Clearing the Air: Ordinary Negligence in Take-Home Asbestos Exposure Litigation*, 86 WASH. L. REV. 359, 363 (2011) (“Because of the widespread past and present use of asbestos, low levels of asbestos are present in air, soil, and water, *and each person is exposed to it at some point during his or her life.*”) (emphasis supplied, footnote omitted). The same commentator observed in the omitted footnote, however, that “[m]ost people do not become ill from their exposure. People who become ill from asbestos are usually those who are exposed to it on a regular basis, most often through a job where they work directly with the material or through substantial environmental contact.” *Id.* at 363 n. 36 (alteration supplied) (citing National Cancer Institute, U.S. Department of Health & Human Services, ASBESTOS EXPOSURE AND CANCER RISK FACT SHEET, at 2 (2009)).

<sup>72</sup> Doc. no. 123 (Barbara Bobo’s May 30, 2013 Deposition), at 52-70; doc. no. 201 (Agreed and Stipulated Facts), ¶ 18.

years before the date on which she was diagnosed with malignant pleural mesothelioma.<sup>73</sup>

In addition, Mrs. Bobo worked as a beautician for various employers from 1976 until 1983, when she opened her own beauty salon in a building adjacent to the home that she shared with James Bobo.<sup>74</sup> From then until 2011 she was self-employed as a beautician under the trade name of “Barbara’s Beauty Shop.”<sup>75</sup> During the approximately thirty-five years that Mrs. Bobo was employed as a beautician, she generally worked five and a half days each week, with a typical work day of eight hours.<sup>76</sup> Mrs. Bobo used stationary hair dryers on her patrons twenty-five to thirty times each day, and she inhaled dust particles while doing so.<sup>77</sup> She also inhaled dust while cleaning hair dryer filters each month: a maintenance procedure that involved removing, cleaning, and reinserting the filters.<sup>78</sup> The record does not indicate whether the particles inhaled by Mrs. Bobo while performing such functions in her beauty salon contained asbestos fibers, and neither the Bobo residence nor Mrs. Bobo’s salon

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<sup>73</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 21.

<sup>74</sup> Doc. no. 123 (Barbara Bobo’s May 30, 2013 Deposition), at 16; doc. no. 201 (Agreed and Stipulated Facts), ¶ 7.

<sup>75</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 19.

<sup>76</sup> Doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 28, 31; doc. no. 201 (Agreed and Stipulated Facts), ¶ 20.

<sup>77</sup> Doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 26-28; doc. no. 201 (Agreed and Stipulated Facts), ¶ 20.

<sup>78</sup> Doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 29-30; doc. no. 201 (Agreed and Stipulated Facts), ¶ 20.

was ever tested for the presence of that substance.<sup>79</sup>

**E. Barbara Bobo's Exposures to Airborne Asbestos That Originated In TVA's Browns Ferry Nuclear Plant**

Plaintiffs contend that their deceased mother's exposure to airborne asbestos fibers from those sources sketched in the preceding section was not significant in comparison to the large quantity of those inherently dangerous toxic substances to which she was subjected through her practice of laundering James Bobo's work clothes over the course of the twenty-two years that he worked for TVA at its Browns Ferry Nuclear Plant.<sup>80</sup> The laundry room located in the center of the Bobo home was small: its floor dimensions were only about four feet by five feet (twenty square feet).<sup>81</sup> Mrs. Bobo washed her husband's clothes twice each week, but her daily practice was to pick up the dirty clothing that he had removed at the end of the preceding work day, carry those articles into the laundry room, shut the door, empty the pockets, shake the clothing to remove loose dirt particles, and place the articles in the washing machine.<sup>82</sup> Mrs. Bobo testified in her deposition that she inhaled

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<sup>79</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 40; doc. no. 83-1 (Barbara Bobo's Sept. 25, 2012 Deposition), at 41-42; doc. no. 51 (Plaintiff's Answer to Interrogatories), at 3.

<sup>80</sup> See doc. no. 171 (Amended Complaint), ¶ 12; doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 22, 39.

<sup>81</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 23-24; doc. no. 83-1 (Barbara Bobo's Sept. 25, 2012 Deposition), at 18.

<sup>82</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 24; doc. no. 83-1 (Barbara Bobo's Sept. 25, 2012 Deposition), at 19.

“dust” while performing those tasks.<sup>83</sup> She described the atmosphere of the laundry room as “[f]oggy,” but said she “just thought it was dust.”<sup>84</sup> She also dry-swept the washroom floor with a small broom and dustpan prior to mopping it, and said that the air became “dusty” when she did so.<sup>85</sup> Again, the record does not indicate whether that “dust” contained asbestos fibers, and the Bobo residence was never tested for the presence of that substance.<sup>86</sup> Even so, the preponderance of the evidence indicates that James Bobo’s clothing was encased in asbestos fibers by the time he returned home from the nuclear plant each evening. It is more likely than not that Mrs. Bobo unknowingly inhaled dangerous concentrations of asbestos fibers as she “shook out” her husband’s clothing while sequestered within the small space of her laundry room.

#### **F. Plaintiff’s Expert**

Dr. Eugene Mark testified, based upon his review of depositions, medical records, and other materials in the case, that Mrs. Bobo was exposed to asbestos by laundering her husband’s clothes for more than twenty-two years.<sup>87</sup> He also testified that studies in the scientific literature link mesothelioma to asbestos exposure from

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<sup>83</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 25; doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 20.

<sup>84</sup> Doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 19 (alteration supplied).

<sup>85</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 26; doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 20.

<sup>86</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 40; doc. no. 83-1 (Barbara Bobo’s Sept. 25, 2012 Deposition), at 41-42; doc. no. 51 (Plaintiff’s Answer to Interrogatories), at 3.

<sup>87</sup> Trial Transcript, Day 1, at 86.

laundering the clothes of a person who works with asbestos.<sup>88</sup> One study relied upon by Dr. Mark (an article by Gunnar Hillerdal entitled “Mesothelioma Cases Associated with Non-Occupational and Low-Dose Exposures”) reported that asbestos fiber concentrations in domestic exposure cases might be as high as in occupational exposure cases.<sup>89</sup> The same study reported that “[o]rdinary vacuum cleaning is not effective in removing asbestos fibers, which can remain for years in the house and be airborne again whenever disturbed. Thus, domestic exposure is not low exposure.”<sup>90</sup> Dr. Mark concluded that Mrs. Bobo’s exposure to asbestos from her husband’s work at TVA was a substantial factor contributing to the development of her mesothelioma.<sup>91</sup>

**G. The Application of Regulations Promulgated by the Occupational Safety and Health Administration to TVA’s Operations**

The Occupational Safety and Health Act of 1970 (“the OSH Act”) required “the head of each Federal agency . . . to establish and maintain an effective and comprehensive occupational safety and health program which is consistent with the standards promulgated under section 665” of the OSH Act. 29 U.S.C. § 668(a).<sup>92</sup>

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<sup>88</sup> *Id.* at 87, 141, 145-51.

<sup>89</sup> *Id.* at 158.

<sup>90</sup> *Id.* (alteration supplied).

<sup>91</sup> *Id.* at 97.

<sup>92</sup> The remainder of that same section of the OSH Act mandates that the head of each Federal agency:

Executive Order 11,612, promulgated in 1971, observed that, “[a]s the Nation’s largest employer, the Federal Government has a special obligation to set an example for safe and healthful employment.” 36 Fed. Reg. 13,891 (July 26, 1971) (alteration supplied). For that reason, the order required the head of each federal department and agency to “establish an occupational safety and health program . . . in compliance with the requirements of . . . section 19(a) of [the OSH Act],” and the programs were required to “be consistent with the standards prescribed by section 6 of [the OSH Act],” now codified as 29 U.S.C. § 668. *Id.* (alterations supplied).

Yet another Executive Order promulgated three years later recognized that “even greater efforts” were needed in order to establish occupational safety and health programs that were consistent with the standards prescribed by Section 6 of the OSH

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(1) provide safe and healthful places and conditions of employment, consistent with the standards set under section 655 of this title;

(2) acquire, maintain, and require the use of safety equipment, personal protective equipment, and devices reasonably necessary to protect employees;

(3) keep adequate records of all occupational accidents and illnesses for proper evaluation and necessary corrective action;

(4) consult with the Secretary with regard to the adequacy as to form and content of records kept pursuant to subsection (a)(3) of this section; and

(5) make an annual report to the Secretary with respect to occupational accidents and injuries and the agency's program under this section. Such report shall include any report submitted under section 7902(e)(2) of Title 5.

29 U.S.C. § 668(a).

Act. Executive Order No. 11,807, recorded at 39 Fed. Reg. 35,559 (Sept. 28, 1974) (alteration supplied). Thus, this 1974 Executive Order was designed to provide additional guidance to ensure effective occupational safety and health programs within executive agencies, and to allow for detailed evaluations of such programs by the Secretary of the Department of Labor. *See id.*

It was not until the promulgation of Executive Order 12,196 in February of 1980, however, that federal executive agencies were explicitly required to comply with the regulations of the Occupational Safety and Health Administration. *See* 45 Fed. Reg. 12,769 (Feb. 26, 1980) (providing that the head of each agency must “[c]omply with all standards issued under section 6 of [the OSH Act],” now codified as 29 U.S.C. § 668 (alterations supplied)).

#### **H. The Evolution of OSHA Standards**

The Occupational Safety and Health Administration (“OSHA”) promulgated an emergency temporary standard for exposure to asbestos fibers under Section 6 of the OSH Act in 1971 (now codified as 29 U.S.C. § 668). 36 Fed. Reg. 23,207 (December 7, 1971). The temporary standard provided that an employee’s exposure could not exceed five fibers longer than five micrometers in length per milliliter of air over an eight-hour, time-weighted average, and could not exceed a peak concentration level of ten fibers longer than five micrometers in length per cubic

centimeter of air. *See* 36 Fed. Reg. 23,208.<sup>93</sup> The concentration level of airborne asbestos fibers was to be determined by “the membrane filter method at 400-450x magnification (4 millimeter objective) phase contrast illumination.” *Id.*

The exposure limits stated in the 1971 temporary standard became final in 1972, when OSHA notified employers to prepare for the following reductions in exposure limits that were to take effect, initially, on July 7, 1972, and then be further reduced four years thereafter, on July 1, 1976:

(b) *Permissible exposure to airborne concentrations of asbestos fibers*

(1) *Standard effective July 7, 1972.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed *shall not exceed five fibers*, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) *Standard effective July 1, 1976.* The 8-hour time-weighted average air-borne concentrations of asbestos fibers to which any employee may be exposed *shall not exceed two fibers*, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) *Ceiling concentration.* No employee shall be exposed at any given time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

29 C.F.R. § 1910.93a(b) (1972), *recodified as* 29 C.F.R. § 1910.1001 (1975)

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<sup>93</sup> The Federal Register notice issued by OSHA announced the creation of 29 C.F.R. § 1910.93a (1971), *recodified as* 29 C.F.R. § 1910.1001 (1975). The emergency temporary standard for exposure to asbestos fibers was codified as 29 C.F.R. § 1910.93a(a).

(emphasis supplied).<sup>94</sup>

OSHA also specified requirements for protective equipment and clothing for employees, such as James Bobo, who were exposed to airborne concentrations of asbestos fibers that exceeded the permissible exposure levels prescribed in Section 1910.93a(b).

(d)(3) *Special clothing*: The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) *Change rooms*: (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) *Clothes lockers*: The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) *Laundering*: (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section . . . .

29 C.F.R. § 1910.93a(d) (1972), *recodified as* 29 C.F.R. § 1910.1001 (1975).

In addition, OSHA mandated particular methods of measuring and monitoring

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<sup>94</sup> At the time OSHA notified employers to prepare for the upcoming reductions in exposure limits, it also amended 29 C.F.R. § 1910.93a to eliminate the provision containing the temporary standard. *See* 37 Fed. Reg. 11,318-20 (June 7, 1972).

the concentrations of airborne asbestos fibers.

(e) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 x (magnification) (4 millimeter objective) with phase contrast illumination.

(f) *Monitoring* — (1) *Initial determinations.* Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section . . . .

(2) *Personal monitoring* — (i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

29 C.F.R. §§ 1910.93a(e)-(f) (1972), *recodified as* 29 C.F.R. § 1910.1001 (1975).

The 1972 OSHA standard for asbestos exposure also contained a mandate for employer-provided medical examinations: *i.e.*, “[E]very employer shall provide, or make available, comprehensive medical examinations to each of his employees

engaged in occupations exposed to airborne concentrations of asbestos fibers.” 29 C.F.R. § 1910.93a(j)(3) (alteration supplied).

## **I. TVA Internal Policies**

TVA has an internal safety organization that is “responsible for establishing TVA policies and procedures for assuring safe and healthful work conditions for all employees on TVA properties (TVA safety practices).”<sup>95</sup> Such safety practices “are organized generally into three tiers: agency safety practices established by the TVA safety organization; business unit safety practices established by major business units such as nuclear power . . . ; and site specific safety practices established by local facilities such as Browns Ferry . . . .”<sup>96</sup> Further, many of those safety practices address specific standards relating to the use of asbestos at TVA properties, such as the Browns Ferry Nuclear Plant.<sup>97</sup>

### **1. TVA Hazard Control Standard 407**

TVA adopted “Hazard Control Standard 407” for asbestos on April 15, 1974.<sup>98</sup> Paragraph 1.0 of that standard stated that it applied “primarily, but not exclusively, to operations where asbestos or insulating material containing asbestos is handled,

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<sup>95</sup> Doc. no. 68 (Christopher Jeter Affidavit), ¶ 2.

<sup>96</sup> *Id.* ¶ 3; doc. no. 201 (Agreed and Stipulated Facts), ¶ 44.

<sup>97</sup> Doc. no. 68 (Christopher Jeter Affidavit), ¶ 4; doc. no. 201 (Agreed and Stipulated Facts), ¶ 45.

<sup>98</sup> Doc. no. 68 (Christopher Jeter Affidavit), ¶ 4; *see also* Plaintiffs’ Exhibit 528 (TVA Hazard Control Standard 407); doc. no. 68-1 (same).

mixed, sprayed, applied, removed, cut, or scored.”<sup>99</sup> Paragraph 4.1.2 noted that the following materials are examples of substances that may contain asbestos: heat insulating materials; fireproofing materials; transite;<sup>100</sup> limpet fibers;<sup>101</sup> calcium silicate block and pipe insulation; asbestos cement, mortars, wire covers, grouting, paper, blankets, tape, and plaster; and vehicle brake linings.<sup>102</sup> Paragraph 4.3 of Hazard Control Standard 407 prescribed the permissible exposure level for airborne concentrations of asbestos in the following terms:

4.3.1 The 8-hour time-weighted average airborne concentration of asbestos fibers to which an employee may be exposed shall not exceed five fibers, each longer than five micrometers, per cubic centimeter of air. (On July 1, 1976, the permissible concentration for asbestos will be reduced from five fibers to two fibers, each longer than five micrometers, per cubic centimeter of air.)

4.3.2 An employee shall not be exposed for any length of time to airborne concentrations of asbestos fibers in excess of the ceiling limit of 10 fibers, each longer than five micrometers, per cubic centimeter of air without appropriate personal protective equipment as described in paragraph 4.5 of this standard.<sup>103</sup>

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<sup>99</sup> Plaintiffs’ Exhibit 528 (TVA Hazard Control Standard 407), at 1 (alteration supplied).

<sup>100</sup> “Transite” originated as a trade name for a line of asbestos-cement products, but over time, it became a generic term for “a hard, fireproof composite material” and “fiber cement boards” that were frequently used in wall construction. See <http://en.wikipedia.org/wiki/Transite> (last visited Sept. 29, 2015).

<sup>101</sup> “Limpet” is a mixture of cement and asbestos, and it was often used in a spray-form. See Geoffrey Tweedale, *Limpet Asbestos: Spraying Ill-Health World-Wide*, World Asbestos Report, [http://worldasbestosreport.org/conferences/gac/gac2000/A5\\_8\\_182.php](http://worldasbestosreport.org/conferences/gac/gac2000/A5_8_182.php) (last visited Sept. 29, 2015). It was often used for insulation, sound-proofing, fireproofing, and condensation control. *Id.*

<sup>102</sup> See Plaintiffs’ Exhibit 528 (TVA Hazard Control Standard 407), at 2.

<sup>103</sup> *Id.* at 2-3.

Paragraph 4.4 provided instructions on the proper use of asbestos-containing products:

- 4.4.1 Engineering controls, except when technically not feasible, shall be utilized to ensure that each individual working with or near materials containing asbestos is not exposed to concentrations of asbestos dust in excess of the permissible limits. Administrative controls shall be used only if engineering controls are not feasible.
- 4.4.2 When both respiratory protection and control of exposure time are practicable, control of exposure time shall be used. The permissible exposure time can be determined by allowing a precalculated length of exposure to airborne concentrations of asbestos above the permissible concentration (but in no case, above the ceiling limit), followed by a comparable period of no exposure. *Accurate records of exposure times and airborne asbestos concentrations shall be maintained.*
- 4.4.3 Asbestos and materials containing asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise used in a wet state (except where impracticable or where the usefulness of the product would be diminished) to prevent airborne concentrations of asbestos fibers in excess of the permissible limits . . . .<sup>104</sup>

Paragraph 4.5 of Hazard Control Standard 407 defined the requirements for personal protective equipment as follows:

- 4.5.1.1 The use of respiratory protection for controlling employee exposure to asbestos shall be limited to the following conditions:
  - A. Prior to implementation of engineering controls or work methods designed to maintain airborne asbestos concentrations within the permissible limits required by

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<sup>104</sup> *Id.* at 3 (emphasis supplied).

paragraph 4.3 of this standard.

- B. Where engineering controls or administrative controls are technically not feasible.
- C. In emergency situations.
- D. *Prior to determining the airborne concentrations of asbestos in a work environment.*

4.5.2 Employees exposed to airborne concentrations of asbestos fibers greater than the ceiling limit shall be provided with and required to use personal protective equipment to protect the eyes, head, hands, feet, and trunk from asbestos . . . . *Protective clothing shall be utilized for exposures of undetermined concentrations until it has been proven by tests that the activity will not produce concentrations above the ceiling limits.*<sup>105</sup>

Paragraph 4.6.2 contained standards for changing rooms, and stated that “[e]ach employee exposed to airborne concentrations of asbestos in excess of the ceiling limit shall be provided with two separate lockers or containers *so separated or isolated [as] to prevent contamination of the employee’s street clothes from his work clothes.*”<sup>106</sup>

Paragraph 4.7 established requirements for “Personal and Environmental Monitoring,” and provided that:

Initial and continuing monitoring shall be performed by the TVA Hazard Control Branch which will *quantitatively determine airborne asbestos*

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<sup>105</sup> *Id.* at 3-5 (emphasis supplied).

<sup>106</sup> Plaintiffs’ Exhibit 528 (TVA Hazard Control Standard 407), at 5 (alterations and emphasis supplied).

*fiber concentration in the breathing zone of exposed employees, and in areas of a work environment which are representative of airborne concentrations which may reach the breathing zone of employees. Eight-hour time-weighted average and ceiling concentrations shall be determined. Such evaluations shall be accomplished at least semiannually and shall represent with reasonable accuracy the levels of exposure of employees.*<sup>107</sup>

TVA also was required to “maintain records of personal monitoring and environmental monitoring.”<sup>108</sup>

Paragraph 4.9, addressing the subject of “Housekeeping,” provided that “the use of air jets *or dry sweeping to clean up asbestos accumulations is prohibited.*”<sup>109</sup>

Finally, Paragraph 4.10.2 of Hazard Control Standard 407 mandated that “[e]mployees exposed to airborne concentrations of asbestos fibers shall receive an annual medical examination.”<sup>110</sup> Significantly, TVA was required to retain records of those medical examinations for twenty years.<sup>111</sup>

## **2. TVA nuclear power safety and hazard control manual**

TVA’s Nuclear Power Division adopted a safety and hazard control manual on May 8, 1978.<sup>112</sup> The threshold limit for airborne asbestos concentrations under the

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<sup>107</sup> *Id.* at 5 (emphasis supplied).

<sup>108</sup> *Id.* at 6.

<sup>109</sup> *Id.* (emphasis supplied).

<sup>110</sup> *Id.* (alteration supplied).

<sup>111</sup> *Id.*

<sup>112</sup> See Plaintiffs’ Exhibit 529 (Division of Nuclear Power Safety and Hazard Control Manual); doc. no. 86-4 (same); doc. no. 68-2 (TVA Asbestos Standards – Browns Ferry Nuclear

standards of that manual was “five fibers per cubic centimeter, greater than five micrometers in length.”<sup>113</sup> Requirement number 4 specified that “[e]mployees exposed to airborne concentrations of asbestos shall wear an approved respirator and protective coveralls . . . .”<sup>114</sup> Additionally, requirement number 12 mandated that “[e]ach employee exposed to airborne concentrations of asbestos shall be provided with two separate lockers. One locker shall be used for street clothes and must not be contaminated with asbestos.”<sup>115</sup> Similarly, a 1979 internal plant memorandum stated that “[l]ocker and shower facilities separate from other plant facilities should be provided for all insulators *and designated cleanup laborers*.”<sup>116</sup>

### **3. Browns Ferry Standard Practice 14.45**

“Standard Practice 14.45,” adopted by the Browns Ferry Nuclear Plant on October 15, 1980, is a reference point that established site-specific policies and procedures governing the use of asbestos and asbestos-containing materials.<sup>117</sup> That standard set the threshold limit value for airborne asbestos concentrations at “five

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Plant (1975-1985)).

<sup>113</sup> Plaintiffs’ Exhibit 529 (Division of Nuclear Power Safety and Hazard Control Manual), at 2965.

<sup>114</sup> *Id.* (alteration supplied).

<sup>115</sup> *Id.* at 2966 (alteration and emphasis supplied).

<sup>116</sup> Plaintiffs’ Exhibit 530 (alteration and emphasis supplied).

<sup>117</sup> *See* Plaintiffs’ Exhibit 534 (Browns Ferry Nuclear Plant Standard Practice 14.45), at 1; doc. no. 90-2 (same), at ECF 2; doc. no. 68-2 (TVA Asbestos Standards – Browns Ferry Nuclear Plant (1975-1985)).

fibers per cubic centimeter, greater than five micrometers in length.”<sup>118</sup> In addition, the same standard provided that “[e]mployees exposed to airborne concentrations of asbestos shall wear an approved respirator and protective coveralls . . . .”<sup>119</sup> Annual medical examinations were also mandated for “employees exposed to airborne concentrations of asbestos fibers.”<sup>120</sup> Although other requirements in Standard Practice 14.45 applied to “concentrations of asbestos dust in excess of the permissible limits,” the respirator and coveralls requirement did not make that distinction.<sup>121</sup> Thus, that requirement applied to *any* quantity of asbestos exposure.

#### **4. 1984 memorandum – “TVA Policy on Asbestos”**

A 1984 memorandum entitled “TVA Policy on Asbestos” established “additional requirements to better protect employees from exposure to asbestos fibers.”<sup>122</sup> The first requirement lowered the agency target for asbestos to “no more than 0.5 fibers, longer than 5 micrometers, per cubic centimeter of air (f/cc) as the permissible 8-hour time-weighted average (TWA) airborne concentration of all forms of asbestos. The ceiling level will be lowered from 10 f/cc to 5 f/cc.”<sup>123</sup> Employees

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<sup>118</sup> Plaintiffs’ Exhibit 534 (Browns Ferry Nuclear Plant Standard Practice 14.45), at 1.

<sup>119</sup> *Id.* (alteration supplied).

<sup>120</sup> *Id.* at 2.

<sup>121</sup> *Id.* at 1.

<sup>122</sup> See TVA’s Exhibit 67 (Memorandum by W.F. Willis), at 1; doc. no. 90-3 (same), at 1; doc. no. 68-2 (TVA Asbestos Standards – Browns Ferry Nuclear Plant (1975-1985)), at 1.

<sup>123</sup> TVA’s Exhibit 67 (Memorandum by W.F. Willis), at 1.

who could “reasonably be expected to be exposed above a TWA of .1 fiber/cc” were to be identified, given initial and annual training, and offered medical examinations.<sup>124</sup>

#### **J. TVA’s Response to OSHA Regulations, Policies, and Procedures**

The parties stipulated that no statute, regulation, or policy — including the Occupational Safety and Health Act of 1970 and regulations promulgated thereunder by the Occupational Safety and Health Administration — imposed a mandatory requirement that TVA prevent *all* exposure to airborne asbestos fibers during the years that James Bobo worked at Browns Ferry.<sup>125</sup> In other words, that Act and the regulations promulgated thereunder, as well as TVA’s own internal policies and procedures, allowed employees to be exposed to airborne asbestos fibers at concentration levels between zero and the permissible exposure levels in effect on the date of the occupational exposure.<sup>126</sup> Even so, TVA was aware of the regulations promulgated pursuant to the Occupational Safety and Health Act by the Occupational Safety and Health Administration.<sup>127</sup> As early as 1974, TVA knew that there was a

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<sup>124</sup> *Id.* at 2.

<sup>125</sup> *See* doc. no. 201 (Agreed and Stipulated Facts), ¶ 46 (1st sentence).

<sup>126</sup> *Id.* (2d sentence) (“In other words, the OSH Act of 1970, OSHA regulations, and TVA procedures allow for occupational exposures to asbestos at levels between zero and the permissible exposure levels (PELs) in effect at the time of the occupational exposure.”).

<sup>127</sup> *Id.* ¶ 48.

certain amount of airborne asbestos fibers that could land on an employee's clothing, and that should be avoided for reasons of the employee's health.<sup>128</sup> TVA first established an asbestos standard in 1974 as part of its Hazard Control Manual.<sup>129</sup> Moreover, as previously discussed in Parts III.I.1. and III.I.2. of this opinion, *supra*, TVA's internal policies required that protective clothing and separate lockers be provided to employees exposed to *any quantity* of airborne asbestos fibers. Further, TVA was aware that, of nine employee deaths that occurred during 1977, two were attributable to asbestos: a labor foreman died of asbestosis, and an electrician foreman died of mesothelioma.<sup>130</sup> Finally, even though Browns Ferry Nuclear Plant employees began to use insulation materials that were *not* made of (or did not contain) asbestos (generally brown or greenish-brown in color) during the 1980s,<sup>131</sup> insulation materials containing asbestos continued to be used and installed until at least 1991.<sup>132</sup>

TVA's industrial hygiene database lists no record of air sampling to determine concentrations of airborne asbestos fibers prior to October 1979.<sup>133</sup> Indeed,

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<sup>128</sup> *Id.* ¶ 49.

<sup>129</sup> *Id.* ¶ 50.

<sup>130</sup> *Id.* ¶ 51; *see also* Part III.C. of this opinion, *supra*.

<sup>131</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 53.

<sup>132</sup> *Id.* ¶ 52.

<sup>133</sup> *Id.* ¶ 55.

employees at the Browns Ferry Nuclear Plant were not monitored for asbestos exposure until at least the early 1980s.<sup>134</sup> A 1979 internal plant memorandum stated that “TVA and Federal safety and health standards require that we provide locker and shower facilities for insulators and designated cleanup laborers that are separate from the plant’s regular facilities.”<sup>135</sup>

The extent to which employees in the Browns Ferry Nuclear Plant were exposed to airborne asbestos fibers was to be determined by a visual inspection conducted by supervisory personnel, but plant managers were not provided any meaningful criteria to measure the concentration levels to which employees were exposed.<sup>136</sup> Further, Browns Ferry supervisors conducted asbestos air monitoring measurements of only three employees in 1980.<sup>137</sup> Only eight employees were sampled in 1981, and only five in 1982.<sup>138</sup> For such reasons, an internal review conducted in 1988 determined that asbestos monitoring “has been very limited *and does not meet the monitoring requirements of the OSHA asbestos standard.*”<sup>139</sup>

Further, TVA did not provide laborers with protective clothing, separate lockers, or

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<sup>134</sup> *Id.* ¶ 56.

<sup>135</sup> *Id.* ¶ 57.

<sup>136</sup> Trial Transcript, Day 2, at 62-64, 67, 71.

<sup>137</sup> *Id.* at 65-66. Air monitoring was performed by measuring the number of asbestos fibers in the air in the work area of the employee. *Id.* at 57.

<sup>138</sup> *Id.* at 66.

<sup>139</sup> Plaintiffs’ Exhibit 536, at 7 (emphasis supplied).

separate showers, unless they worked in a C-Zone.<sup>140</sup>

## **J. Plaintiffs' Damage Claims**

Barbara Bobo was subjected to a “thoracentesis” — a procedure in which a long needle is used to perforate the chest-wall and draw off morbid accumulations of excess fluid from the pleural space between the inner wall of the chest cavity and the lungs<sup>141</sup> — during November of 2011.<sup>142</sup> Approximately two liters of fluid were removed.<sup>143</sup> A November 11, 2011 laboratory analysis of the extracted fluid produced a diagnosis of mesothelioma:<sup>144</sup> “a tumor derived from mesothelial tissue . . . .”<sup>145</sup> A pathological evaluation conducted on December 13, 2011 resulted in a diagnosis of malignant pleural mesothelioma:<sup>146</sup> a condition that is “often the result of excessive exposure to asbestos,”<sup>147</sup> and one that often spreads widely, invading other thoracic structures. “It is usually fatal within one year.”<sup>148</sup> Mrs. Bobo survived nearly twice that length of time, but the remainder of her term on this earth was filled with pain.

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<sup>140</sup> See Trial Transcript, Day 2, at 13, 16; Plaintiffs' Exhibit 530.

<sup>141</sup> See <http://www.nhlbi.nih.gov/health/health-topics/topics/> (“What is Thoracentesis?”) (last visited June 10, 2015).

<sup>142</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 58.

<sup>143</sup> *Id.* ¶ 59.

<sup>144</sup> *Id.* ¶ 60.

<sup>145</sup> *Dorland's Illustrated Medical Dictionary* 1134 (30th ed. 2003).

<sup>146</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 61.

<sup>147</sup> *Dorland's Illustrated Medical Dictionary* 1134 (30th ed. 2003).

<sup>148</sup> *Id.* 1135.

She was subjected to multiple rounds of chemotherapy from January through April of 2012,<sup>149</sup> and endured a number of undesirable side effects from the treatments, including pain when drinking fluids and spitting up raw flesh.<sup>150</sup> The therapy became so painful that she referred to the chemical administered to her as the “Red Devil.”<sup>151</sup> Dr. David Sugarbaker performed a pleurectomy on Mrs. Bobo on June 14, 2012, during which he removed a rib and the pleural lining of one lung.<sup>152</sup> Mrs. Bobo was hospitalized for twenty-two days following that procedure, after which she was discharged to begin a painful rehabilitation regime.<sup>153</sup>

Plaintiffs claim \$8,000,000 in damages for the physical pain, suffering, mental anguish, and loss of the enjoyment of life endured by their mother during the twenty-two month period between her diagnosis of mesothelioma and resulting death.<sup>154</sup> They also assert a claim for the aggregate amount of \$537,131.82 in medical expenses incurred in the unsuccessful attempt to force Mrs. Bobo’s mesothelioma into remission.<sup>155</sup>

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<sup>149</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 62.

<sup>150</sup> *Id.* ¶ 64.

<sup>151</sup> *Id.* ¶ 63.

<sup>152</sup> *Id.* ¶ 65.

<sup>153</sup> *Id.* ¶ 66.

<sup>154</sup> *Id.* ¶ 68; doc. no. 191 (Pretrial Order), at 6.

<sup>155</sup> Doc. no. 180 (Stipulations Regarding Plaintiffs’ Final Medical Expenses Damages Claim for Purposes of Trial); doc. no. 201 (Agreed and Stipulated Facts), ¶¶ 70-71.

Barbara Bobo was insured at all relevant times by Medicare and Blue Cross Blue Shield of Alabama.<sup>156</sup> Those insurers paid or satisfied 99.1% of Mrs. Bobo's medical expenses (*i.e.*, \$532,131.82 of the \$537,131.82 aggregate).<sup>157</sup> Medicare asserts a subrogation claim of \$82,793.81 for its payments to her medical providers.<sup>158</sup>

Plaintiffs retained Garretson Resolution Group, Inc., to represent them in negotiating with Medicare Secondary Payer Recovery Contractors regarding the amount of Medicare's subrogation claim.<sup>159</sup> Garretson has contested \$1,180.06 of Medicare's subrogation claim in an effort to reduce the amount plaintiffs will be required to pay.<sup>160</sup> The amount of the claim recoverable from plaintiffs may be subject to reduction as provided in 42 C.F.R. § 411.37 (2013).<sup>161</sup>

#### **L. Plaintiffs' Settlements**

Barbara Bobo submitted claims for compensation to seventeen asbestos bankruptcy trusts following her diagnosis of mesothelioma.<sup>162</sup> Plaintiffs' attorneys

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<sup>156</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 72.

<sup>157</sup> Doc. no. 179 (Stipulations Regarding Plaintiffs' Final Medical Expenses Damages Claim for Purposes of Trial); doc. no. 201 (Agreed and Stipulated Facts), ¶ 73.

<sup>158</sup> Doc. no. 179 (Stipulations Regarding Plaintiffs' Final Medical Expenses Damages Claim for Purposes of Trial); doc. no. 201 (Agreed and Stipulated Facts), ¶ 74.

<sup>159</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 75.

<sup>160</sup> *Id.* ¶ 76.

<sup>161</sup> *Id.* ¶ 77.

<sup>162</sup> Doc. no. 81 (Notice of Service of Plaintiff's Bankruptcy Claims); doc. no. 201 (Agreed and Stipulated Facts), ¶ 78.

prepared and submitted the claims forms to the asbestos bankruptcy trusts for the purpose of obtaining monetary compensation for Mrs. Bobo's asbestos-related injuries.<sup>163</sup> As of February 9, 2015, plaintiffs had entered into settlements with asbestos bankruptcy trusts in the aggregate amount of \$136,176.37. Accordingly, TVA is entitled to an offset in that amount.<sup>164</sup>

As of February 9, 2015, plaintiffs had seven pending claims with other asbestos bankruptcy trusts, and potential claims against other bankrupt entities that may, or may not, establish trusts for the compensation of asbestos victims. TVA is entitled to an offset in the amount of all payments received by plaintiffs in connection with any of those pending claims, if any.<sup>165</sup>

#### IV. CONCLUSIONS OF LAW

*"We bring more than a paycheck to our loved ones and family. We bring asbestosis, silicosis, brown lung, black lung disease. And radiation hits the children before they've even been conceived."*

*"More Than a Paycheck,"* sung by Sweet Honey in the Rock on the Collector Records album entitled *We Just Come to Work Here, We Don't Come to Die*.<sup>166</sup>

This case proceeded to trial on plaintiffs' claims that TVA negligently violated

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<sup>163</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 79.

<sup>164</sup> *Id.* ¶ 80.

<sup>165</sup> *Id.* ¶ 81.

<sup>166</sup> See <http://www.folkways.si.edu/sweet-honey-in-the-rock/more-than-a-paycheck/american-folk/music/track/smithsonian> (last visited Sept. 17, 2015).

numerous regulations and standards promulgated by OSHA, as well as its own internal policies relating to monitoring and reducing exposure to asbestos and preventing the transport of asbestos fibers off TVA property. Specifically, plaintiffs alleged that TVA negligently violated OSHA regulations and its own policies in at least the following ways: exceeding permissible levels of exposure; failing to follow mandatory directives governing the monitoring of an employee's exposure; failing to administer annual medical examinations to employees who, like James Bobo, were exposed to airborne asbestos fibers as a result of their work duties; and failing to provide protective equipment, clothing, lockers, and shower facilities for employees like James Bobo.<sup>167</sup> In order to prevail on any of those claims, plaintiffs were required to prove by a preponderance of the evidence that: TVA owed a duty of care to Barbara Bobo; TVA breached that duty; Barbara Bobo was harmed; and TVA's breach of duty was the proximate cause of the harm to Mrs. Bobo and of the damages claimed by plaintiffs. *E.g., Ford Motor Co. v. Burdeshaw*, 661 So. 2d 236, 238 (Ala.

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<sup>167</sup> See doc. no. 191 (Pretrial Order) ¶ 5(b), at 6; see also doc. no. 174 (Memorandum Opinion and Order Denying TVA's Motion for Summary Judgment), at 56 (permitting case to proceed on plaintiffs' claims that TVA was negligent in at least the following respects: (1) TVA violated Occupation Safety and Health Administration regulations concerning permissible levels of asbestos exposure; (2) TVA failed to follow mandatory directives governing the monitoring of an employee's exposure to asbestos; (3) TVA failed to provide employees who were exposed to airborne asbestos fibers protective clothing and equipment, as well as separate locker rooms and shower facilities; and (4) TVA failed to administer annual medical examinations to employees exposed to airborne asbestos fibers).

1995). *See also, e.g., Sessions v. Nonnenmann*, 842 So. 2d 649, 651 (Ala. 2002) (“In [a] premises-liability case, the elements of negligence are the same as those in any tort litigation: duty, breach of duty, cause in fact, proximate or legal cause, and damages.”) (quoting *Ex parte Harold L. Martin Distributing Co.*, 769 So. 2d 313, 314 (Ala. 2000) (in turn quoting *E.R. Squibb & Sons, Inc. v. Cox*, 477 So. 2d 963, 969 (Ala. 1985)) (alteration in original, internal quotation marks omitted).

In addition to disputing plaintiffs’ proof of the elements of a *prima facie* case, TVA contends that the statute of limitations has expired, and that it is shielded from liability by the so-called “discretionary function doctrine.”

#### **A. Did TVA Owe Barbara Bobo a Duty of Care?**

Plaintiffs must demonstrate that TVA was subject to a legal “duty” in order to maintain an action based upon a theory of negligence. *E.g., Thompson v. Mindis Metals*, 692 So. 2d 805, 807 (Ala. 1997); *see also, e.g., Pugh v. Butler Telephone Co.*, 512 So. 2d 1317, 1319 (Ala. 1987) (stating that “the existence of a legal duty of care owed by the defendant to the plaintiff” is fundamental to the maintenance of a negligence action); *Bessemer v. Brantley*, 65 So. 2d 160, 165 (Ala. 1953) (observing that “where there is no duty, there can be no negligence”).

Negligence is a matter of risk — that is to say, of recognizable danger of injury. It has been defined as “conduct which involves an unreasonably great risk of causing damage,” or, more fully, conduct

“which falls below *the standard established by law for the protection of others against unreasonably great risk of harm.*” . . .

William L. Prosser, *Law of Torts* § 31, at 145 (4th ed. 1971) (emphasis supplied, footnotes omitted). In the context of the present discussion, the phrase “the standard established by law for the protection of others against [an] unreasonably great risk of harm” is synonymous with the concept of “duty.”

TVA denies that it had a duty to avoid harming non-employees like Barbara Bobo, saying that “no Alabama appellate court has issued an opinion regarding the availability of take-home claims under Alabama law,”<sup>168</sup> and that a majority of the jurisdictions that have considered similar claims have dismissed them “for lack of [a] legal duty.”<sup>169</sup>

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<sup>168</sup> Doc. no. 128 (TVA’s Brief in Support of Summary Judgment), at 20 (citations omitted); *see also* doc. no. 209 (TVA’s Post-Trial Brief), at 19 (“TVA incorporates its summary judgment briefing that TVA owed no legal duty of care to Mrs. Bobo, who was never present at BFN.”) (citing doc. no. 128, at 20-30).

<sup>169</sup> *See* doc. no. 128 (TVA’s Brief in Support of Summary Judgment), at 20 (alteration supplied) (citing *Campbell v. Ford Motor Co.*, 141 Cal. Rptr. 3d 390 (Cal. Ct. App. 2012) (concluding that “a property owner has no duty to protect family members of workers on its premises from secondary exposure to asbestos used during the course of the property owner’s business”); *Price v. E.I. DuPont De Nemours & Co.*, 26 A.3d 162, 170 (Del. 2011) (holding that there was no legal duty because the plaintiff did not have a “special relationship” with the premises owner); *Boley v. Goodyear Tire & Rubber Co.*, 929 N.E.2d 448, 453 (Ohio 2010) (holding in accordance with an Ohio statute that “a premises owner is not liable in tort for claims arising from asbestos exposure originating from asbestos on the owner’s property, unless the exposure occurred at the owner’s property”); *In re Certified Question from Fourteenth District Court of Appeals of Texas*, 740 N.W.2d 206, 222 (Mich. 2007) (“[W]e hold that, under Michigan law, defendant, as owner of the property . . . did not owe to the deceased, who was never on or near that property, a legal duty to protect her from exposure to any asbestos fibers carried home on the clothing of a member of her household . . .”) (alteration supplied); *In re Eighth Judicial District Asbestos Litigation*, 815 N.Y.S.2d 815, 817

“A legal duty to exercise care . . . arises where the parties are bound by contract, . . . or where the obligations are expressly or impliedly imposed by statute, municipal ordinance, or by administrative rules or regulations, or by judicial decisions.” *King v. National Spa & Pool Institute*, 570 So. 2d 612, 614 (Ala. 1990) (citations and internal quotation marks omitted).<sup>170</sup> Here, obligations that established legal duties against which the actions of TVA can be measured were imposed by regulations promulgated by the Occupational Safety and Health Administration, as well as by TVA itself.

Moreover, as plaintiffs point out, the cases relied upon by TVA do not place

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(N.Y. Sup. Ct. 2006) (holding that employer did not owe duty of care to spouse of employee who contracted mesothelioma as a result of laundering her husband’s asbestos-laden work clothes); *CSX Transportation, Inc. v. Williams*, 608 S.E.2d 208, 210 (Ga. 2005) (“[W]e decline to extend on the basis of foreseeability the employer’s duty beyond the workplace to encompass all who might come into contact with an employee or an employee’s clothing outside the workplace.”) (alteration supplied); *Adams v. Owens-Illinois, Inc.*, 705 A.2d 58, 66 (Md. Ct. Spec. App. 1998) (holding that a steel company did not owe a duty of care to an employee’s wife to maintain a safe workplace for its employees); *see also* Kan. Stat. Ann. § 60-4905(a) (2012) (“No premises owner shall be liable for any injury to any individual resulting from silica or asbestos exposure unless such individual’s alleged exposure occurred while the individual was at or near the premises owner’s property.”); Ohio Rev. Code Ann. § 2307.941(A)(1) (“A premises owner is not liable for any injury to any individual resulting from asbestos exposure unless that individual’s alleged exposure occurred while the individual was at the premises owner’s property.”)).

<sup>170</sup> *See also* I Thomas Atkins Street, *The Foundations of Legal Liability*, at 92 (1906):

In every situation where a man undertakes to act or to pursue a particular course he is under an implied legal obligation or duty to act with reasonable care, to the end that the person or property of others may not be injured by any force which he sets in operation or by any agent for which he is responsible. If he fails to exercise the degree of caution which the law requires in a particular situation, he is held liable for any damage that results to another just as if he had bound himself by an obligatory promise to exercise the required degree of care.

the same emphasis upon the foreseeability of the risk of harm as do the courts of Alabama.<sup>171</sup> In this State, the “key factor” for determining whether a duty should be imposed as a matter of law in novel factual circumstances is the “foreseeability” of the harm that might result if care is not exercised. *DiBiasi v. Joe Wheeler Electric Membership Corp.*, 988 So. 2d 454, 461 (Ala. 2008) (quoting *Patrick v. Union State Bank*, 681 So. 2d 1364, 1368 (Ala. 1996) (in turn quoting *Smitherman v. McCafferty*, 622 So. 2d 322, 324 (Ala. 1993)); *see also, e.g., Yanmar America Corp. v. Nichols*, 166 So. 3d 70, 83 (Ala. 2014) (observing that “[t]he ultimate test of duty to use [due] care is found in the foreseeability that harm may result if care is not exercised”) (quoting *King*, 570 So. 2d at 615 (in turn quoting *Bush v. Alabama Power Co.*, 457 So. 2d 350, 353 (Ala. 1984)) (alterations in original)); *see also, e.g., Taylor v. Smith*, 892 So. 2d 887, 892 (Ala. 2004) (holding that, when determining whether a duty exists, “[t]he key factor is whether the injury was *foreseeable* by the defendant”) (emphasis in original, citations and internal quotation marks omitted, alteration supplied).

The foreseeability of the harm to Mrs. Bobo was evident from the very nature of the relevant OSHA regulations and TVA’s internal standards, all of which

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<sup>171</sup> *See* doc. no. 211 (Plaintiffs’ Post-Trial Brief), at 22-23 (citations omitted); *see also* doc. no. 145 (Plaintiffs’ Brief in Opposition to Summary Judgement) at 27-30 (citations omitted). *See supra* note 169 for a listing of the cases relied upon by TVA.

mandated, among other things, that TVA provide two lockers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes, separate changing facilities, and showers for its employees. The common thread linking those rules was the goal of preventing asbestos fibers from clinging to an employee's street clothes, skin, or hair, and being carried off of TVA property. Other regulations, such as those setting limits on airborne asbestos concentrations at the nuclear plant, and those requiring periodic medical examinations, *clearly* contemplated that TVA employees would be exposed to and inhale airborne asbestos fibers *while at work*. Note well, however, that no reasonable person can argue that the regulations which sought to prevent the transport of asbestos fibers *off TVA property* did not contemplate that employees' household members would be exposed to asbestos originating at the plant.

Plaintiffs argue, based upon the Alabama Supreme Court's repeated characterization of the *foreseeability of an injury* as the "key factor" in determining whether a duty exists under novel factual circumstances, that this State likely will join those jurisdictions holding that the employers of persons exposed to asbestos during the performance of their work responsibilities owe a duty of reasonable care to non-employees in "take-home cases" such as this one.<sup>172</sup> *See, e.g., Simpkins v. CSX Corp.*,

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<sup>172</sup> *See* doc. no. 145 (Plaintiffs' Brief in Opposition to Summary Judgment), at 27-30.

929 N.E.2d 1257, 1263-64 (Ill. App. Ct. 2010) (“[W]e believe that it takes little imagination to presume that when an employee who is exposed to asbestos brings home his work clothes, members of his family are likely to be exposed as well. Thus, the general character of the harm to be prevented was reasonably foreseeable.”) (alteration supplied); *Satterfield v. Breeding Insulation Co.*, 266 S.W.3d 347, 367 (Tenn. 2008) (holding that the harm to the plaintiff was foreseeable, because she was regularly in contact with asbestos-contaminated work clothes for extended periods of time); *Olivo v. Owens-Illinois, Inc.*, 895 A.2d 1143, 1149 (N.J. 2006) (holding that a premises owner owed a duty to spouses handling asbestos-contaminated work clothes based on the foreseeable risk of harm arising from such exposures); *Zimko v. American Cyanamid*, 905 So. 2d 465, 483 (La. App. 2005) (same). In fact, “[i]n nearly every case in which a court has used foreseeability as the primary consideration in duty analysis, the court has recognized a duty of care in take-home exposure cases.” Meghan E. Flinn, *A Continuing War with Asbestos: The Stalemate Among State Courts on Liability for Take-Home Asbestos Exposure*, 71 WASH. & LEE L. REV. 707, 719 (2014).

In the final analysis, the determination of the issue of whether a duty was owed

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Because TVA incorporated its brief in support of summary judgment into its post-trial arguments, this court will also consider plaintiffs’ brief in opposition to summary judgment.

by TVA to Mrs. Bobo and others like her under the circumstances of this case is “strictly a legal question” to be answered by the court. *DiBiasi*, 988 So. 2d at 460; *see also, e.g.*, William L. Prosser, *Palsgraf Revisited*, 52 MICH. L. REV. 1, 15 (1953) (“There is a duty if the court says there is a duty; the law, like the Constitution, is what we make it.”).<sup>173</sup> In exercising that responsibility, this court does not find the cases relied upon by TVA to be persuasive predictors of what Alabama appellate courts will hold. For example, when deciding that no duty was owed to non-employees in a take-home exposure claim similar to the present action, the Supreme Court of Erie County, New York (*a trial court*), stated that “[d]uty in negligence cases is not defined by foreseeability of injury . . . . Rather, foreseeability determines merely ‘the scope of the duty once it is determined to exist . . . .’” *In re Eighth Judicial District Asbestos Litigation*, 815 N.Y.S.2d 815, 938-39 (N.Y. Sup. Ct. 2006) (internal citations omitted, alteration supplied).<sup>174</sup> Further, while the Supreme Court

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<sup>173</sup> Benjamin N. Cardozo, while serving as a Judge of the New York Court of Appeals (but later nominated and confirmed as a Justice of the United States Supreme Court), spoke generally of the scope of the risk of harm that must be guarded against in the classic case of *Palsgraf v. Long Island R. Co.*, 248 N.Y. 339, 162 N.E. 99 (N.Y. Ct. App. 1928), saying that “the orbit of the danger as disclosed to the eye of reasonable vigilance would be the orbit of the duty. . . . The risk reasonably to be perceived defines the duty to be obeyed, and risk imports relation; it is risk to another or to others within the range of apprehension. . . .” *Id.* at 343-44, 162 N.E. at 100.

<sup>174</sup> Indeed, New York does not include the foreseeability of harm in its calculus for determining whether a duty exists in novel factual circumstances, as indicated by the following quotation from *Holdampf v. A.C. & S., Inc.*, 5 N.Y.3d 486 (N.Y. Ct. App. 2005):

The threshold question in any negligence action is: does defendant owe a legally recognized duty of care to plaintiff? Courts traditionally fix the duty point by

of Georgia declined to extend an employer’s duty to provide a safe workplace beyond its employees based on policy considerations, that court did not place the same emphasis on foreseeability that an Alabama court would. *See CSX Transportation, Inc. v. Williams*, 608 S.E.2d 208, 210 (Ga. 2005) (“[W]e decline to extend on the basis of foreseeability the employer’s duty beyond the workplace to encompass all who might come into contact with an employee or an employee’s clothing outside the workplace.”). Finally, even though the California Court of Appeals assumed that a property owner could “reasonably be expected to foresee the risk of latent disease to a worker’s family members secondarily exposed to asbestos used on its premises,” it concluded that “strong public policy considerations counsel against imposing a duty of care on property owners for such secondary exposure.” *Campbell v. Ford Motor Co.*, 141 Cal. Rptr. 3d 390, 402-03 (Cal. Ct. App. 2012). Notably, however, the California court did not characterize foreseeability of the risk as the “key factor” in

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balancing factors, including the reasonable expectations of parties and society generally, the proliferation of claims, the likelihood of unlimited or insurer-like liability, disproportionate risk and reparation allocation, and public policies affecting the expansion or limitation of new channels of liability. Thus, in determining whether a duty exists, courts must be mindful of the precedential, and consequential, future effects of their rulings, and limit the legal consequences of wrongs to a controllable degree” . . . .

Further, “[f]oreseeability, alone, does not define duty — it merely determines the scope of the duty once it is determined to exist” . . . .

*Id.* at 493 (quoting *Hamilton v. Beretta U.S.A. Corp.*, 96 N.Y.2d 222, 232 (N.Y. Ct. App. 2001)) (alteration in original).

its determination.

Policy factors relied upon by jurisdictions that decline to recognize a legal duty in take-home exposure cases include preventing unfairness to defendants and further clogging of court dockets. This court finds, however, that other policy factors are of higher importance in this, and similar, cases: *e.g.*, the *mandatory* nature of the alternative conduct; the fact that TVA, a government entity provably aware of OSHA regulations (as evidenced by TVA internal memoranda reciting OSHA findings and regulations concerning asbestos exposure and TVA's promulgation of its own exposure reduction policies), was in a far better position to protect Mrs. Bobo than either James Bobo or Mrs. Bobo herself; and the relatively simple, low-cost methods which, if implemented *as directed both by federal law and TVA internal policy*, may have prevented Barbara Bobo's contraction of mesothelioma.

In contrast to TVA, plaintiffs rely upon cases that are *actually* persuasive because, in the opinions they cite, the courts emphasized the foreseeability of an injury, while also considering public policy. *See Satterfield*, 266 S.W.3d at 373-75 (observing that "Tennessee's courts rely heavily on foreseeability when determining the existence and scope of a duty," and that "the existence of a duty to exercise reasonable care to avoid the risk of harm to another involves considerations of fairness and public policy"); *Olivo*, 895 A.2d at 1148 ("Foreseeability is significant

in the assessment of a duty of care to another,” and “[o]nce the ability to foresee harm to a particular individual has been established . . . considerations of fairness and policy govern whether the imposition of a duty is warranted.”) (alteration supplied).

Furthermore, as the Tennessee Supreme Court recognized, there is no danger to the business community in finding that “a sophisticated [employer] that was aware of, or should have been aware of, the risk to others that could result from exposure to asbestos fibers, . . . knew its employees’ work clothes contained significant quantities of asbestos fibers, and [] understood the danger of transmitting these asbestos fibers to others” outside the workplace, owes a duty to protect members of its employees’ families in take-home exposure claims. *Satterfield*, 266 S.W.3d at 371; *see also Olivo*, 895 A.2d at 1150 (“Although Exxon Mobil fears limitless exposure to liability based on a theory of foreseeability built on contact with Anthony’s asbestos-contaminated clothing, such fears are overstated. *The duty we recognize in these circumstances is focused on the particularized foreseeability of harm to plaintiff’s wife, who ordinarily would perform typical household chores that would include laundering the work clothes worn by her husband.*”) (emphasis supplied); *Simpkins*, 929 N.E.2d at 1266 (dismissing policy concerns of “limitless liability to ‘the entire world’” based upon the fact that “the scope of liability will be inherently limited by the foreseeability of the harm”). Finding that employers have

a duty to exercise reasonable care to prevent foreseeable harm to their employees' spouses does not raise a "specter of limitless liability."<sup>175</sup> A bright-line rule, limiting liability to an employee and the members of his household (nuclear family) is both appropriate and manageable. The liability of entities like TVA is also restricted by the discretionary function doctrine and a plaintiff's burden of proving that an employer's conduct was both the factual and proximate cause of his or her injuries.

This court also finds that the policy considerations that might weigh against the recognition of a duty of reasonable care to family members of employees in take-home asbestos exposure cases do not outweigh either the foreseeability of the risk of harm in a jurisdiction like Alabama that relies heavily on that consideration as "the key factor" in its duty analysis,<sup>176</sup> or policy considerations that weigh *in favor* of

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<sup>175</sup> Meghan E. Flinn, *A Continuing War with Asbestos: The Stalemate Among State Courts on Liability for Take-Home Asbestos Exposure*, 71 WASH. & LEE L. REV. 707, 724 (2014).

<sup>176</sup> In recognition of the fact that there were no clear, controlling, precedents by Alabama's appellate courts, and that the significance of this issue extended beyond the present case, this court concluded following trial that the question should be certified to the State's highest court. *See, e.g., Jones v. Dillard's, Inc.*, 331 F.3d 1259, 1268 (11th Cir. 2003) (observing that, whenever there is "substantial doubt about a question of state law upon which a case turns," the issue "should be resolved by certifying the question to the state supreme court. Resolution in this way avoids the unnecessary practice of guessing the outcome under state law and offers the state court an opportunity to explicate state law") (citations omitted); *see also, e.g., Sultenfuss v. Snow*, 35 F.3d 1494, 1504 (11th Cir. 1994) (*en banc*) (Carnes, J., dissenting) ("Only through certification can federal courts get definitive answers to unsettled state law questions. Only a state supreme court can provide what we can be assured are 'correct' answers to state law questions, because a state's highest court is the one true and final arbiter of state law."). Accordingly, the following question was presented to the Alabama Supreme Court pursuant to Article VI, § 6.02(b)(3) of the 1901 Alabama Constitution, as amended, and Alabama Rule of Appellate Procedure 18:

recognizing such a duty. In the present case, TVA: treated mandatory federal regulations as discretionary guidelines, and nullified its own exposure reduction standards by failing to implement them; had actual knowledge that asbestos was carcinogenic, and that its employees were daily coming into contact with that substance and taking it home to their spouses and children; and did not use that knowledge to enact low-cost measures to restrict airborne asbestos concentrations to permissible levels at the Browns Ferry Nuclear Plant or prevent its employees from transporting asbestos to their homes after work. Individuals like Mrs. Bobo — who did not work at the nuclear plant or ever enter TVA’s premises — cannot be made whole for TVA’s derelictions, if a common law negligence claim is unavailable.

Finally, even though the Alabama Supreme Court has not spoken to the precise issue of duty in take-home exposure cases, it has not always limited the finding of a legal duty to situations in which there was a contractual, or employer-employee, relationship between an identifiable victim and the defendant. *See, e.g., Wyeth v.*

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**WHETHER A PREMISES OWNER HAS A DUTY TO PROTECT THE FAMILY MEMBERS OF PERSONS WHO WORK ON THE PROPERTY OWNER’S PREMISES FROM SECONDARY EXPOSURE TO A TOXIC AGENT, SUCH AS ASBESTOS, USED DURING THE COURSE OF THE PROPERTY OWNER’S BUSINESS?**

Doc. no. 215 (Memorandum Opinion Submitting Certified Questions), at 53 (emphasis in original). Regrettably, the Alabama Supreme Court declined to accept that question. *Cf. Price v. Time, Inc.*, 416 F.3d 1327, (11th Cir. 2005) (observing that, “[t]o the disappointment of the district court (and this one as well), the Alabama Supreme Court declined to answer the certified question”) (alteration supplied).

*Weeks*, 159 So. 3d 649, 675 (Ala. 2014) (the absence of a contractual relationship does not mean there is no duty); *Taylor v. Smith*, 892 So. 2d 887, 895 (Ala. 2004) (differentiating between situations in which the defendant did not create the risk of harm and, thus, owed no duty to a plaintiff, and other situations in which the defendant performs “an *affirmative act which creates the risk* that unidentifiable third parties might be injured,” and stating that, under the latter circumstance, “there is, *most certainly*, a duty to unidentifiable third parties who might be injured as a result”) (emphasis in original); *State Farm Fire & Casualty Co. v. Owen*, 729 So. 2d 834, 839 (Ala. 1998) (“Determining whether there is a duty necessarily requires analyzing the factual background of the case. In that sense, whether a duty exists is a mixed question of law and fact.”).

In light of the Alabama Supreme Court’s emphasis on foreseeability, that Court’s recognition of a duty where a defendant creates the risk of harm, and the very serious public policy considerations at issue, this court holds that TVA owed a duty of reasonable care to Barbara Bobo, and others like her.

**B. Did TVA Breach the Duty of Reasonable Care Owed to Barbara Bobo?**

Plaintiffs contend that TVA breached its duty of care to Mrs. Bobo by failing to prevent her exposure to asbestos fibers that contaminated her husband’s clothes during his employment at the Browns Ferry Nuclear Plant. Plaintiffs argue that Mrs.

Bobo was exposed to asbestos because TVA: violated OSHA regulations concerning the permissible levels of asbestos exposure; failed to follow mandatory directives governing the monitoring of an employee's exposure to asbestos (including both OSHA regulations and TVA's internal policies); failed to provide special, protective clothes; failed to provide two lockers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes; failed to provide separate change rooms and showers for workers exposed to asbestos; failed to provide facilities for laundering asbestos-contaminated clothing *inside* the Browns Ferry facility, rather than being worn home and laundered there; and, failed to administer annual medical examinations to employees exposed to airborne asbestos fibers.<sup>177</sup>

TVA's initial response was that plaintiffs failed to present sufficient evidence showing that James Bobo was exposed to asbestos while working inside the Browns Ferry Nuclear Plant.<sup>178</sup>

Because Mrs. Bobo's alleged second hand exposures are derivative of her husband's occupational exposures, Plaintiffs must first prove that her husband had occupational exposures to asbestos and that those exposures were the result of TVA's negligent conduct and were not, for example, occupational exposures to asbestos at levels allowed under OSHA regulations and TVA procedures in effect at that time. (Stip. Fact 46, Doc. 201 at 10-11.) Plaintiffs also must show that any

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<sup>177</sup> See doc. no. 211 (Plaintiffs' Post-Trial Brief), at 25-26.

<sup>178</sup> See doc. no. 209 (TVA's Post-Trial Brief), at 3.

exposures resulting from TVA's negligent conduct caused the clothes that Mr. Bobo wore home from work to be burdened with asbestos fibers. In other words, that the occupational exposures **did not** occur in a C-Zone where Mr. Bobo would have been wearing protective over garments that would have prevented asbestos fibers from burdening his personal clothing.

Doc. no. 209 (TVA's Post-Trial Brief), at 3-4 (boldface emphasis in original). *See also, e.g., Blackston v. Shook & Fletcher Insulation Co.*, 764 F.2d 1480, 1481 (11th Cir. 1985) ("Regardless of the theory of liability in [asbestos-related tort] cases, the threshold for every theory is proof that an injured plaintiff was exposed to asbestos-containing products for which the defendant is responsible.") (alteration supplied).

This court finds, however, that a preponderance of the credible evidence clearly established that James Bobo was exposed to airborne asbestos fibers when he swept insulation residue containing that inherently dangerous toxic substance — which was pervasive throughout the nuclear plant, in areas other than the C-Zones — and that he was not provided protective work-clothing and equipment, separate lockers for work and personal clothing, showers, or on-site laundry facilities. Further, the evidence clearly and convincingly established that Barbara Bobo was exposed to airborne asbestos fibers over the course of more than twenty-two years, when laundering her husband's work clothes. Accordingly, TVA breached its duty of care to Mrs. Bobo by failing to implement eminently reasonable and minimally expensive

safety procedures that would have prevented her exposure to asbestos fibers carried home on her husband's work clothes.

### C. Causation

As to what is the cause of an event, philosophers and logicians may differ from jurists. John Stuart Mill, in his work on Logic, says, in substance, that the cause of an event is the sum of all the antecedents, and that we have no right to single out one antecedent and call that the cause. Whether from the standpoint of philosophy or logic Mr. Mill is right is a question which it does not concern us here to discuss. His view cannot be adopted as a working rule by courts. On that view no tortfeasor would be regarded as the cause of any damage. The practical question for a jurist is whether the tortious conduct of any human being has had such an operation in subjecting a plaintiff to damage as to make it just that the tortfeasor should be held liable to compensate the plaintiff.

“The lawyer cannot afford to adventure himself with philosophers in the logical and metaphysical controversies that beset the idea of cause.”

If, for practical legal purposes, we reject the philosophic view of causation, and instead adopt the juristic view, it follows that the defendant's tort [*breach of duty*], in order to be regarded as the legal cause of the damage, *need not be the sole cause, need not be the only causative antecedent*. . . .

Jeremiah Smith, *Legal Cause of Actions of Tort*, 25 HARV. L. REV. 103, 104 (1911) (quoting Sir Frederick Pollock, *The Law of Torts* 36 (6th ed. 1890)) (other citations omitted, alteration and emphasis supplied).

More specifically, one commentator has observed that toxic tort cases such as

the present one

present major challenges to tort law and the judicial system. Causation requirements pose one such challenge. Proving the cause of injuries that remain latent for years, are associated with diverse risk factors, and occur at background levels even without any apparent cause, is the “central problem” for toxic tort plaintiffs. . . .

Steve Gold, *Causation in Toxic Torts: Burdens of Proof, Standards of Persuasion, and Statistical Evidence*, YALE L.J. 376, 376-77 (1986).

In approaching the issue of causation, therefore, a distinction must be made between “general causation,” on the one hand, and “proximate causation,” on the other. “General causation” refers to the question of whether an allegedly toxic substance has *the potential* to cause injury. In that regard, the Eleventh Circuit has observed that

toxic tort cases usually come in two broad categories: first, those cases in which the medical community generally recognizes the toxicity of the drug or chemical at issue, and second, those cases in which the medical community does not generally recognize the agent as both toxic and causing the injury plaintiff alleges. *Examples of the first type include toxins like asbestos, which causes asbestosis and mesothelioma; silica, which causes silicosis; and cigarette smoke, which causes cancer. . . .*

*McClain v. Metabolife International, Inc.*, 401 F.3d 1233, 1239 (11th Cir. 2005) (emphasis and ellipsis supplied); *see also, e.g., Chapman v. Procter & Gamble Distributing, LLC*, 766 F.3d 1296, 1303 (11th Cir. 2014) (same); doc. no. 201 (Agreed and Stipulated Facts), ¶ 82 (“[A]sbestos is generally recognized in the

medical community as having the potential to cause mesothelioma.”) (alteration supplied).

In order to recover on a claim of negligence, however, plaintiffs must also prove “proximate causation” by demonstrating that TVA’s conduct “naturally and probably brought about the harm,” and that “the harm would not have happened without the conduct.” 2 *Alabama Pattern Jury Instructions — Civil* § 33.00 (3d ed. 2013). *Accord Lingefelt v. International Paper Co.*, 57 So. 3d 118, 122-23 (Ala. Civ. App. 2010) (“Proximate cause is an act or omission that, in a natural and continuous sequence, unbroken by any new independent causes, produces the injury and without which the injury would not have occurred.”) (quoting *Martin v. Arnold*, 643 So. 2d 564, 567 (Ala. 1994)); *Vines v. Plantation Motor Lodge*, 336 So. 2d 1338, 1339 (Ala. 1976) (“Liability will be imposed only when negligence is the proximate cause of injury; injury must be a natural and probable consequence of the negligent act or omission which an ordinarily prudent person ought reasonably to foresee would result in injury.”); *City of Mobile v. Havard*, 268 So. 2d 805, 810 (Ala. 1972) (“For an act to constitute actionable negligence, there must be not only some causal connection between the negligent act complained of and the injury suffered, but also the connection must be by a natural and unbroken sequence, without intervening, efficient causes, so that, but for the negligence of the defendant, the injury would not

have occurred.”).

Even though the foregoing standards for determining proximate causation are appropriate in most actions based upon a theory of negligence, the parties do not agree on the question of whether Alabama would apply traditional “but-for” causation, or “substantial factor” causation, where multiple exposures to a toxic agent, such as airborne asbestos fibers, combine to produce the plaintiffs’ injuries.<sup>179</sup> The Alabama Supreme Court has addressed that issue, but did so in the context of *maritime law*, in connection with the claims asserted against shipowners by three former seamen under the Jones Act, 3 U.S.C. § 688,<sup>180</sup> and alleging injury as a result of exposure to asbestos products while serving on board the defendants’ ships. *Sheffield v. Owens–Corning Fiberglass Corp.*, 595 So. 2d 443 (Ala. 1992). The shipowners sought indemnity and contribution under principles of maritime law, and filed third-party complaints against twenty-seven entities that manufactured asbestos-containing products that could have been on board the ships on which the plaintiffs served. In turn, the plaintiffs amended their complaints to allege claims under general

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<sup>179</sup> TVA incorporates its summary judgment briefing regarding the causation standard that should apply in this case. Doc. no. 209 (TVA’s Post-Trial Brief), at 8 n.9. Plaintiffs, likewise, incorporate their summary judgment briefing regarding that issue. Doc. no. 213 (Plaintiffs’ Response to TVA’s Post-Trial Brief), at 7-8.

<sup>180</sup> The Jones Act “extend[s] to seamen the rights accorded railway workers under the Federal Employers’ Liability Act, 45 U.S.C. §§ 51-60.” *Spinks v. Chevron Oil Co.*, 507 F.2d 216, 224 (5th Cir. 1975), *clarified on other grounds*, 546 F.2d 675 (5th Cir. 1977) (alteration supplied).

maritime law against the same twenty-seven manufacturers. *See id.* at 446.

Several of the manufacturers, including Crane and OCF [Owens-Corning Fiberglass Corporation], moved for summary judgments on the ground that there was insufficient evidence linking the plaintiffs' injuries to any particular manufacturer's product. On February 22, 1991, the trial court granted the motions of Crane and OCF and certified its summary judgments as final, pursuant to Ala.R.Civ.P. 54(b). The issues presented on appeal from those summary judgments are (1) whether maritime law controls the claims of the plaintiffs and shipowners against OCF and Crane, and (2) whether evidence of a causal connection between products manufactured by Crane and OCF was sufficiently established in each plaintiff's case to preclude summary judgment.

*Id.* at 446-47 (alteration supplied). The Alabama Supreme Court initially addressed the law that applied to the issues raised by the shipowners' indemnity claims against third-party defendants Owens-Corning Fiberglass Corporation ("OCF") and another manufacturer of asbestos products, John Crane, Inc. ("Crane"), and concluded that those claims — like the underlying Jones Act claims of the seamen against the shipowners — were governed by federal maritime law:

Although the claims of the plaintiffs against the shipowners for Jones Act negligence and unseaworthiness are not at issue in this appeal, it is undisputed that federal law governs those claims. It follows, therefore, that federal maritime law also governs the indemnity claims of the shipowners against OCF and Crane. *Vaughn v. Farrell Lines, Inc.*, 937 F.2d 953, 956 (4th Cir. 1991) (where the "underlying tort claims from which the indemnity claim is derived . . . are maritime tort claims," the "indemnity claim arising therefrom is similarly a maritime claim"); *White v. Johns-Manville Corp.*, 662 F.2d 243, 247 (4th Cir. 1981); *Swogger v. Waterman S.S. Corp.*, 151 A.D.2d 100, 546 N.Y.S.2d 80 (1989); T. Schoenbaum, *Admiralty and Maritime Law* § 4-15, at 146

(1987) (“There is admiralty jurisdiction over controversies involving contribution and indemnification if jurisdiction exists over the underlying primary cause of action”).

In our view, the underlying claims in this suit are the plaintiffs’ claims against the shipowners alleging Jones Act negligence and unseaworthiness; therefore, the above-cited authorities fully answer the question regarding the applicable law. However, because the strenuous arguments of OCF and Crane focus principally on the product liability claims involved in this suit, as if those claims formed the “underlying primary cause of action,” we will, out of deference to OCF and Crane, inquire whether the product liability claims of the plaintiffs against OCF and Crane, standing alone, would be subject to admiralty jurisdiction.

*Sheffield*, 595 So. 2d at 447 (footnotes omitted).

The maritime law basis of the *Sheffield* opinion confused the issue of whether its causation principles also applied in a case like the present one. Indeed, TVA argues that “[t]here is *no indication in that opinion* that the Alabama Supreme Court would deviate from Alabama’s traditional causation standard (requiring conduct without which the injury would not have occurred) in an asbestos case against a premises owner governed by Alabama negligence law.”<sup>181</sup>

Accordingly, in an attempt to ascertain the standard that the Alabama Supreme Court would apply in cases involving multiple exposures to a toxic agent, this court certified the following question to the Alabama Supreme Court:

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<sup>181</sup> Doc. no. 128 (TVA’s Brief in Support of Summary Judgment), at 14 n.6 (emphasis supplied); *see also* doc. no. 209 (TVA’s Post-Trial Brief), at 8 n.9 (“TVA incorporates its summary judgment briefing regarding the causation standard that should apply in this case.”).

**WHAT CAUSATION STANDARD APPLIES WHEN MULTIPLE EXPOSURES TO A TOXIC AGENT, SUCH AS ASBESTOS, COMBINE TO PRODUCE THE PLAINTIFF’S INJURY?**

Doc. no. 215 (Memorandum Opinion Submitting Certified Questions), at 53 (emphasis in original). Regrettably, the Alabama Supreme Court declined to accept the question. Even so, its order included citations that directed this court to reconsider the *Sheffield* opinion, and its proper scope:

IT IS FURTHER ORDERED that the Court declines to accept the second certified question. *See Sheffield v. Owens-Corning Fiberglass Corp.*, 595 So. 2d 443, 450 (Ala. 1992). *See also Owens-Corning Fiberglass Corp. v. Gant*, 662 So. 2d 255, 256 (Ala. 1995).

Doc. no. 217 (Alabama Supreme Court Order Declining Certified Questions) (all emphasis in original). The *Sheffield* pincite references Part III of the Court’s opinion, discussing “PROOF OF CAUSATION” in the following manner:

At the outset, we point out that although these three plaintiffs have outstanding Jones Act claims against their employers, the applicable standard of proof of causation in all these claims against nonemployer manufacturers is the standard of proof applicable under general principles of maritime law, not, as the shipowners seem to imply, under the standard of proof for Jones Act negligence. *See Brief of Appellants*, at 31.

**The principles of maritime law are “[d]rawn from state and federal sources” and represent an “amalgam of traditional common-law rules, modifications of those rules, and newly created rules.”** *East River S.S. Corp. v. Transamerica Delaval, Inc.*, 476 U.S. 858, 864-65, 106 S. Ct. 2295, 2299, 90 L. Ed. 2d 865 (1986). In formulating the corpus of maritime law, “[a]dmiralty courts have felt

free to cull what they considered the best principles from the decisions of various courts and from treatise and textwriters.” *Watz v. Zapata Off-Shore Co.*, 431 F.2d 100, 113 (5th Cir. 1970). Courts sitting in admiralty, therefore, apply “the general law of torts” when those general principles are consistent with admiralty’s policies and purposes. *Harrison v. Flota Mercante Grancolombiana, S.A.*, 577 F.2d 968, 977 (5th Cir. 1978); *Spinks v. Chevron Oil Co.*, 507 F.2d 216, 222, 222 n.8 (5th Cir. 1975), *clarified on other grounds*, 546 F.2d 675 (5th Cir. 1977).

The general tort law to which the admiralty courts often look for the substantive standards of proof of causation is the *Restatement (Second) of Torts* § 431 (1965). See, e.g., *Chavez v. Noble Drilling Corp.*, 567 F.2d 287 (5th Cir. 1978); *Harrison v. Flota Mercante Grancolombiana, S.A.*, 577 F.2d 968 (5th Cir. 1978); *Spinks v. Chevron Oil Co.*, 507 F.2d 216 (5th Cir. 1975), *clarified on other grounds*, 546 F.2d 675 (5th Cir. 1977); *Watz v. Zapata Off-Shore Co.*, 431 F.2d 100 (5th Cir. 1970); *Anderson v. Whittaker Corp.*, 692 F. Supp. 734 (W.D. Mich. 1987), *aff’d*, 894 F.2d 804 (6th Cir. 1990).

Section 431 provides that “[t]he actor’s negligent conduct is a legal cause of harm to another if . . . his conduct is a *substantial factor* in bringing about the harm.” (Emphasis added.) In order to prevail, the plaintiff “must make it appear that it is [1] *more likely than not* that the conduct of the defendant was [2] a *substantial factor in bringing about the harm.*” *Restatement (Second) of Torts* § 433B, comment a (emphasis added).

*Sheffield*, 595 So. 2d at 450 (italicized emphasis and bracketed alterations in original, boldface emphasis supplied, footnotes omitted). The emphasized language from the *Sheffield* Court’s discussion of causation hollows TVA’s contention that substantial factor causation is confined to the context of maritime cases. If the Alabama Supreme Court desired to indicate that the concept of substantial factor causation applies only

to *maritime* cases, then it would not have instructed this court to “*See Sheffield v. Owens-Corning Fiberglass Corp.*, 595 So. 2d 443, 450 (Ala. 1992),” in response to this court’s certification of a question governed by Alabama negligence law.

Moreover, as plaintiffs noted, even though *Sheffield* was a maritime case, the Alabama Supreme Court followed the rationale of that decision in the second case cited in the Court’s response to this court’s certified question, *i.e.*, “*Owens-Corning Fiberglass Corp. v. Gant*, 662 So. 2d 255, 256 (Ala. 1995),” which determined the sufficiency of the evidence needed to create a jury question on proximate cause in an asbestos case.<sup>182</sup> *See* doc. no. 145 (Plaintiff’s Brief in Opposition to Summary Judgment), at 24-25.

TVA contends that, even if the Alabama Supreme Court adopted substantial

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<sup>182</sup> *Gant* was an appeal that arose from the trial of four asbestos personal injury actions that had been consolidated for trial, and in which the jury returned verdicts in favor of the plaintiffs. Owens Corning Fiberglass Corporation (“OCF”) contended that the trial judge had erred when denying its motion for a directed verdict on the issue of proximate cause, and argued that plaintiffs had failed to prove sufficient exposure to OCF’s asbestos-containing product, “Kaylo.” The Alabama Supreme Court rejected that argument, and cited its opinion in *Sheffield* approvingly.

OCF contends that it was entitled to a directed verdict on the issue of proximate cause, arguing that the plaintiffs failed to prove sufficient exposure to OCF’s asbestos-containing product, Kaylo. We have carefully and thoroughly studied the record. We conclude that the trial court properly sent the cases to the jury. *See Sheffield v. Owens–Corning Fiberglass Corp.*, 595 So. 2d 443, 456 (Ala. 1992); Rule 50, A. R. Civ. P.; *K.S. v. Carr*, 618 So. 2d 707, 713 (Ala. 1993); *Bailey v. Avera*, 560 So. 2d 1038, 1039 (Ala. 1990); *Woodruff v. Johnson*, 560 So. 2d 1040, 1041 (Ala. 1990); *Timmerman v. Fitts*, 514 So. 2d 907, 910 (Ala. 1987).

*Gant*, 662 So. 2d at 256.

factor causation as the proper standard, plaintiffs failed to satisfy that standard under either “the *Bostic* ‘doubling of the risk’ standard,”<sup>183</sup> or “the *Lohrmann* ‘frequency, regularity, and proximity’ test.”<sup>184</sup> Doc. no. 209 (TVA’s Post-Trial Brief), at 8-11. However, neither the Alabama Supreme Court, nor any of the lower courts in that State, has ever cited either the *Bostic* “doubling of the risk” standard, or the

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<sup>183</sup> See *Bostic v. Georgia-Pacific Corp.*, 439 S.W.3d 332 (Tex. 2014), concluding that in all asbestos cases involving multiple sources of exposure, including mesothelioma cases, the standards for proof of causation in fact are the same. In reviewing the legal sufficiency of the evidence:

- proof of “any exposure” to a defendant’s product will not suffice and instead the plaintiff must establish the dose of asbestos fibers to which he was exposed by his exposure to the defendant’s product;
- the dose must be quantified but need not be established with mathematical precision;
- the plaintiff must establish that the defendant’s product was a substantial factor in causing the plaintiff’s disease;
- the defendant’s product is not a substantial factor in causing the plaintiff’s disease if, in light of the evidence of the plaintiff’s total exposure to asbestos or other toxins, reasonable persons would not regard the defendant’s product as a cause of the disease; [and]
- to establish substantial factor causation in the absence of direct evidence of causation, the plaintiff must prove with scientifically reliable expert testimony that the plaintiff’s exposure to the defendant’s product *more than doubled the plaintiff’s risk* of contracting the disease.

*Id.* at 353 (emphasis and alteration supplied); see also doc. no. 209 (TVA’s Post-Trial Brief), at 8-9 (same).

<sup>184</sup> See *Lohrmann v. Pittsburgh Corning Corp.*, 782 F.2d 1156, 1162-63 (4th Cir. 1986) (“To support a reasonable inference of substantial causation from circumstantial evidence, there must be evidence of exposure to a specific product on a regular basis over some extended period of time in proximity to where the plaintiff actually worked.”).

*Lohrmann* “frequency, regularity, and proximity” test.

In summary, based upon the guidance contained in the Alabama Supreme Court’s pincite references to its holdings in *Sheffield* and *Gant*, it appears that the language of Section 431 of the *Restatement (Second) of Torts*, without embellishment, states the proper causation standard in a negligence case involving multiple exposures to asbestos: that is, “the actor’s negligent conduct is a legal cause of harm to another if . . . his conduct is *a substantial factor* in bringing about the harm.” *See Restatement (Second) of Torts* § 431 (1965) (emphasis supplied). By definition, substantial factor causation takes more than one exposure *or cause* into account. And, when a plaintiff proves by a preponderance of the evidence that one particular exposure, or pattern of exposures, was a “substantial factor in bringing about the harm,” then that plaintiff satisfies the element of proximate causation. *See Holland v. Armstrong International, Inc.*, No. 2:11–67221–ER, 2012 WL 7761438, at \*1 (E.D. Pa. Nov. 28, 2012) (observing that, even though the Alabama Supreme Court had not definitively addressed the causation standard to be applied in asbestos cases, that Court “has held *under maritime law* that proof that defendant’s asbestos-containing product caused plaintiff’s injuries is an essential element to any claim based on asbestos exposure”).

TVA additionally argues that there is no reason to deviate from Alabama’s

traditional “but-for” causation standard, and that the Alabama Supreme Court will adopt the following adaptation of that standard in a multiple exposure toxic tort case: *either* “(1) that the illness would not have occurred without exposure to the defendant’s asbestos *or* (2) that exposure to the defendant’s asbestos was independently sufficient to cause the illness.” Doc. no. 128 (TVA’s Brief in Support of Summary Judgment), at 17 (emphasis supplied).<sup>185</sup> *See, e.g., Ford Motor Co. v. Boomer*, 736 S.E.2d 724 (Va. 2013); *Wilcox v. Homestake Mining Co.*, 619 F.3d 1165, 1169 (10th Cir. 2010) (applying New Mexico but-for causation standard to a toxic tort case involving radiation exposure). The standard advocated by TVA appears, however, to be the minority position in asbestos cases. *See, e.g., Lindstrom v. A-C Product Liability Trust*, 424 F.3d 488, 492 (6th Cir. 2005) (applying substantial factor test under maritime law); *Lohrmann v. Pittsburgh Corning Corp.*, 782 F.2d 1156, 1162-63 (4th Cir. 1986) (upholding substantial factor test in a Maryland asbestos case); *Rando v. Anco Insulations, Inc.*, 16 So. 3d 1065, 1088 (La. 2009); *Borg-Warner Corp. v. Flores*, 232 S.W.3d 765, 773-74 (Tex. 2007); *Rutherford v. Owens-Illinois, Inc.*, 941 P.2d 1203, 1219 (Cal. 1997); *Thacker v. UNR Indus., Inc.*, 603 N.E.2d 449, 455 (Ill. 1992).

Moreover, the causation standard advocated by TVA does not “recognize the

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<sup>185</sup> *See also* doc. no. 209 (TVA’s Post-Trial Brief), at 8 n. 9 (“TVA incorporates its summary judgment briefing regarding the causation standard that should apply in this case.”).

proof difficulties accompanying asbestos claims. The long latency period for asbestos-related diseases, coupled with the inability to trace precisely which fibers caused disease and from whose product they emanated, make this process inexact.”

*Borg-Warner Corp.*, 232 S.W.3d at 772. The Illinois Supreme Court addressed some of those issues in the *Thacker* case, saying that:

Courts throughout the country . . . have struggled with how a plaintiff in an asbestos case can fairly meet the burden of production with regard to causation. Several factors complicate the analysis . . . . *First, because asbestos fibers are friable and may float in the air, it is possible that even those who do not come into direct physical contact with asbestos products may suffer from asbestos poisoning.* Second, due to the microscopic size of asbestos fibers, asbestos cannot always be seen drifting in the air or entering a plaintiff’s body. The small size of these fibers also means that asbestos fibers from different sources are generally indistinguishable from one another, even when removed from a plaintiff’s body and examined through a microscope. *Third, asbestos injury takes an extended time period to manifest itself. Evidence presented to the jury showed that the time between when asbestos fibers are first inhaled and when scarring in the lungs becomes symptomatic is commonly between 25 and 30 years.* This means that a plaintiff injured by asbestos fibers often does not know exactly when or where he was injured and therefore is unable to describe the details of how such injury occurred. In addition, we note that even when a plaintiff is able to narrow the circumstances of exposure to a single event or circumstance, the extended passage of time between exposure and illness often means that witnesses are no longer readily available or that the memories of those who are available have become unreliable.

*Thacker*, 603 N.E.2d at 455-56 (emphasis and alterations supplied).

In light of such issues, as well as the Alabama Supreme Court’s apparent

adoption of *Sheffield*'s "substantial factor causation" standard in a case involving jury verdicts against a major manufacturer of asbestos products and in favor of plaintiffs who had sustained personal injuries as a result of exposure to that company's asbestos products, *Owens-Corning Fiberglass, Corp. v. Gant, supra*, this court presumes that the Alabama Supreme Court would apply the substantial factor causation standard in cases like this one.

Under that standard, plaintiffs must show that TVA's conduct, more likely than not, was a substantial factor in causing Mrs. Bobo's harm. *See Sheffield*, 595 So. 2d at 450. TVA argues that plaintiffs cannot meet that standard, because they did not offer sufficient evidence "that Mr. Bobo experienced occupational exposures to asbestos at [the Browns Ferry Nuclear Plant], and no evidence quantifying the amount of asbestos fibers that potentially burdened his personal clothing" to satisfy the "frequency, regularity, and proximity" test.<sup>186</sup>

Contrary to TVA's argument, however, a single exposure to asbestos fibers can be, under Alabama law, a "substantial factor" contributing to the development of mesothelioma, without having to satisfy either *Bostic*'s stringent "doubling of the risk" standard, or *Lohrmann*'s "frequency, regularity, and proximity" test. Indeed,

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<sup>186</sup> Doc. no. 209 (TVA's Post-Trial Brief), at 8-11 (quoting *Bostic v. Georgia-Pacific Corp.*, 439 S.W.3d 332, 353 (Tex. 2014), and *Lohrmann v. Pittsburgh Corning Corp.*, 782 F.3d 1156 (4th Cir. 1986)).

the Alabama Supreme Court observed in its *Sheffield* opinion that evidence showing that a plaintiff was “close to” a person who worked with asbestos insulation, “*coupled with expert testimony that ‘each and every exposure to asbestos contributes in a causally significant and substantial manner to asbestos-related lung impairment,’*” is sufficient to find that “airborne asbestos fibers from [the defendant’s] product [were] a substantial factor in producing the disease from which [the plaintiff] claims to suffer.” *Sheffield*, 595 So. 2d at 456 (emphasis and alterations supplied). In that regard, the evidence in this case established that one of Mr. Bobo’s primary duties during the years that he worked in the Browns Ferry Nuclear Plant was cleaning up the residue left by insulators and asbestos workers. Further, some of the residue he swept from the floor contained asbestos, and fibers of that toxic substance clung to his work clothing. Mr. Bobo came home from work wearing “dusty” clothing, and Mrs. Bobo laundered that clothing twice each week for more than twenty-two years.

In addition, this court previously found, based upon the testimony of plaintiffs’ expert, Dr. Eugene Mark, that studies in generally-accepted scientific literature link mesothelioma to asbestos exposure from laundering the clothes of a person who, like Mr. Bobo, worked with asbestos. One study relied upon by Dr. Mark (Gunnar Hillerdal’s article entitled “Mesothelioma Cases Associated with Non-Occupational and Low-Dose Exposures”) reported that asbestos fiber concentrations in domestic

exposure cases might be as high as in occupational exposure cases.<sup>187</sup> The same study reported that “[o]rdinary vacuum cleaning is not effective in removing asbestos fibers, which can remain for years in the house and be airborne again whenever disturbed. Thus, domestic exposure is not low exposure.”<sup>188</sup> Dr. Mark ultimately concluded, based upon his review of depositions, medical records, and other materials in the case, that Mrs. Bobo’s exposure to asbestos fibers that originated in the Browns Ferry Nuclear Plant, but which were brought into her home on her husband’s work clothes, was a substantial factor contributing to cause the disease that claimed her life, malignant pleural mesothelioma.

TVA contends, nevertheless, that Dr. Mark’s testimony did not prove causation because he did not opine that Mrs. Bobo’s mesothelioma was caused by her exposure to *non-discretionary* asbestos: *i.e.*, a concentration of asbestos fibers *above* the permissible exposure limits established by mandatory federal regulations:

At all times during Mr. Bobo’s TVA employment, the mandatory Federal regulations applicable to TVA allowed for the release (and resultant employee exposure) of “some” asbestos fibers. (Stip. Fact 46, Doc. 201 at 10-11); *see also Botts v. United States*, No. C12-1943JLR, 2013 WL 6729002, at \*10 (W.D. Wash. Dec. 20, 2013) (holding in mesothelioma case involving the discretionary function doctrine that “the Navy’s rules were not intended to prevent *all* asbestos contamination”). In *Botts*, plaintiffs’ expert witness did not distinguish between actionable exposures (e.g., exposures for which the government

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<sup>187</sup> Trial Transcript, Day 1, at 158.

<sup>188</sup> *Id.* (alteration supplied).

may not be found liable on discretionary function grounds [*sic*]), on the one hand, and on-actionable exposures, on the other. Without this distinction, plaintiffs' expert failed to show that plaintiff's [*sic*] mesothelioma was *caused* by any actionable exposures from mandatory rule violations. *Botts*, 2013 WL 6729002, at \*9 (granting discretionary function immunity to the Navy because plaintiff did not present sufficient causation evidence linking plaintiff's mesothelioma to exposures arising from mandatory rule violations; "[o]nly the percentage of [plaintiff's] exposure to asbestos at the Shipyard due to rule violations is relevant to the causation analysis"). In the absence of such distinction, the extent to which actionable exposures contributed to plaintiff's disease "amounts to little more than a guessing game." *Id.* at \*10.

Here, the parties have stipulated that "the OSH Act of 1970, OSHA regulations, and TVA procedures allow for occupational exposures to asbestos at levels between zero and the permissible exposure levels (PELs) in effect at the time of the occupational exposure." (Stip. Fact 46, Doc. 201 at 10-11.) As in *Botts*, Plaintiffs failed to meet their causation burden because they offered no expert testimony that distinguished between legally permissible exposures to asbestos (e.g., exposures below a PEL) and alleged exposures in violation of a mandatory Federal obligation (e.g., exposures in excess of a PEL).<sup>189</sup>

TVA's internal policies, however, prohibited the activities that led to Mr. Bobo taking asbestos fibers home, on his work clothes, and thereby exposing Mrs. Bobo to the inherently dangerous toxic substances. In light of those policies, it is inconsequential that Dr. Mark did not opine that Mrs. Bobo's exposure to asbestos was above the permissible exposure limits established by the Occupational Safety and

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<sup>189</sup> Doc. no. 209 (TVA's Post-Trial Brief), at 11-12 (first two alterations supplied, last two alterations in original).

Health Administration, because TVA had no discretion to expose Mrs. Bobo to *any* asbestos when Mr. Bobo left the Browns Ferry Nuclear Plant.

Finally, TVA argues that Dr. Mark's opinion testimony is not reliable because he opined that

all exposures to asbestos preceding a mesothelioma diagnosis "that are reasonable or significant . . . contribute to the cause of the mesothelioma." Dr. Mark does not, however, quantify the number of fibers or level of exposure that he considers to be significant other than to acknowledge that it must be greater than a single fiber.

Doc. no. 209 (TVA's Post-Trial Brief), at 12-13 (quoting Trial Transcript, Day 1, at 77) (ellipsis in original). This court previously rejected TVA's argument when it was raised in TVA's motion to exclude Dr. Mark's specific causation opinion.<sup>190</sup> In doing so, this court held that

Dr. Mark did *not* opine that every asbestos fiber inhaled causes mesothelioma, or that the inhalation of a single asbestos fiber was sufficient to cause mesothelioma. Instead, based upon a review of the report, the court concludes that Dr. Mark's opinion, in sum, is that each "significant" exposure to asbestos constitutes a substantial contributing factor to the development of diffuse malignant mesothelioma. Dr. Mark defined "significant" exposures as the type of exposures which have been proven by science to cause mesothelioma, including those rising to the level of occupational or para-occupational exposures. In Dr. Mark's opinion, each of those "significant" exposures contributes to the total dose of asbestos fibers that causes diffuse malignant mesothelioma in a given patient and, therefore, shortens the period of time necessary for the disease to develop. Therefore, Dr. Mark concluded that each significant exposure to asbestos is a substantial contributing factor to the

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<sup>190</sup> See doc. no. 129 (Motion to Exclude); doc. no. 188 (Order Denying Motion to Exclude).

development of the disease that actually occurred, when it occurred.

In addition, both the former Fifth Circuit and the Alabama Supreme Court have accepted expert testimony that each exposure to asbestos can contribute to the development of asbestos-related diseases. *See Borel v. Fibreboard Paper Products Corp.*, 493 F.2d 1076, 1083 (5th Cir. 1973) (“[T]he effect of the disease may be cumulative since each exposure to asbestos dust can result in additional tissue changes.”) (alteration supplied); *Sheffield v. Owens-Corning Fiberglass*, 595 So. 2d 443, 456 (Ala. 1992) (holding that a jury question existed regarding causation because of the plaintiff’s expert’s opinion that each exposure to asbestos was causative).

Further, the court does not find Dr. Mark’s opinions regarding the cumulative nature of asbestos diseases and the effect that each significant exposure of asbestos has on the development of such diseases to be inherently unreliable. Indeed, Dr. Mark not only provided an extensive summary of both James and Barbara Bobo’s exposures to asbestos as a result of Mr. Bobo’s employment with TVA, but also ample citations to scientific literature and studies to support each of the underlying bases to his opinion. In addition, Dr. Mark devoted an entire section of his report to scientific studies regarding the risks of household exposures to asbestos from laundering clothing laden with asbestos. Dr. Mark also relied on numerous epidemiological studies finding that even relatively low cumulative exposures to asbestos can cause mesothelioma.

Doc. no. 188 (Order Denying Motion to Exclude), at 20-22 (alteration, emphasis, and footnote in original). In other words, this court concludes that Dr. Mark did not substitute the adjective “significant” for the phrase “single fiber.” Instead, he defined “significant exposures” as those which have been proven by science to cause mesothelioma, including those rising to the level of occupational or para-occupational

exposures — such as those exposures shown in this case, through Mrs. Bobo’s practice of laundering her husband’s dirty work clothing twice each week, for more than twenty-two years, in a small, confined, four-by-five foot space.

Based upon the evidence presented, this court concludes that plaintiffs have established that Barbara Bobo’s exposure to asbestos originating in TVA’s Browns Ferry Nuclear Plant and carried home on her husband’s work clothing was, more likely than not, a substantial factor contributing to the development of the disease that claimed her life and, consequently, the proximate cause of her injuries.

#### **D. Statute of Limitations**

TVA contends that “injuries arising from asbestos exposure that occurred prior to May 19, 1980, are time barred if they were not brought within one year of the date of exposure,” and that “Plaintiffs introduced insufficient evidence at trial showing that Mr. Bobo worked with or around asbestos containing materials after May 19, 1980.”<sup>191</sup> Contrary to those assertions, however, plaintiffs established that James Bobo was exposed to asbestos into at least the mid-to-late 1980s.<sup>192</sup>

Alabama Code § 6-2-30(b) provides that, on May 19, 1980 and after, actions for asbestos exposure “shall be deemed to accrue on the first date the injured party, through reasonable diligence, should have reason to discover the injury giving rise

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<sup>191</sup> Doc. no. 209 (TVA’s Post Trial Brief), at 19.

<sup>192</sup> *See supra* Part III.C.

to such civil action.” Personal injury claims must be brought within two years of accrual. Ala. Code § 6-2-38 (1975). Barbara Bobo first discovered her injury in November of 2011, when she was diagnosed with mesothelioma.<sup>193</sup> This lawsuit was filed less than one year later, on May 21, 2012.<sup>194</sup> Accordingly, plaintiffs are allowed to recover for all injuries proximately caused by her exposure. *See Cazalas v. Johns-Manville Sales Corp.*, 435 So. 2d 55, 57-58 (Ala. 1983) (“[W]e rule that the plaintiffs should not be limited to a recovery for injuries occurring after May 19, 1979, but should be allowed to recover *all injuries* proximately caused by exposure to asbestos”) (alteration supplied, emphasis in original).

#### **E. Discretionary Function Doctrine**

This court previously dealt extensively with the contours of the “discretionary function” exception to the tort liability of governmental entities when ruling upon TVA’s first motion for summary judgment.<sup>195</sup> That analysis will not be reiterated

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<sup>193</sup> Trial Transcript, Day 1, at 190; *see also* doc. no. 83-1 (Deposition of Barbara Bobo), at 40-41 (stating that a physician pronounced the diagnosis of “pleural mesothelioma” in November of 2011).

<sup>194</sup> *See* doc. no. 1 (Complaint).

<sup>195</sup> *See* doc. no. 69 (“TVA’s Motion for Summary Judgment on Discretionary Function Grounds”), and doc. no. 174 (Memorandum Opinion and Order), at 21-56 (subsequently reported as *Bobo v. AGCO Corp.*, 981 F. Supp. 2d 1130, 1143-59 (N.D. Ala. 2013) (Smith, J.)). Pursuant to the discretionary function doctrine, the United States is not liable for “[a]ny claim . . . based upon the exercise or performance or the failure to exercise or perform a *discretionary function or duty* on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused.” 28 U.S.C. § 2680(a) (1948) (alteration and emphasis supplied). *See also Mays v. Tennessee Valley Authority*, 699 F. Supp. 2d 991, 1006 (E.D. Tenn. 2010).

here, except to say in summary that the claims surviving summary judgment included plaintiffs' contentions that TVA exceeded its discretion by violating regulations promulgated by the Occupational Safety and Health Administration and TVA's own, internal guidelines: (1) setting a mandatory, numeric limit for employees' exposure to asbestos fibers; (2) governing the means of monitoring and determining the concentration of airborne asbestos fibers in the work environment; (3) requiring protective equipment and clothing, as well as separate lockers and shower facilities for employees exposed to asbestos fibers; and (4) mandating annual medical examinations for all employees whose work duties exposed them to airborne asbestos fibers. *See* doc. no. 174 (Memorandum Opinion and Order), at 36-56 (subsequently reported as *Bobo v. AGCO Corp.*, 981 F. Supp. 2d 1130, 1150-59 (N.D. Ala. 2013) (Smith, J.)).

The trial evidence established that TVA exceeded its discretion by violating OSHA regulations and its own internal policies regarding three separate activities. First, prior to October 1, 1980, TVA's occupational health and safety program was required to be consistent with OSHA standards, *see* Executive Order 11612, 36 Fed. Reg. 13891 (July 28, 1971). On and after October 1, 1980, TVA's occupational health and safety program was required to comply with those standards. *See* Executive Order 12196, 45 Fed. Reg. 12769 (Feb. 26, 1980). Although the OSHA

standard for permissible exposure levels to asbestos was 2 fibers per cubic centimeter of air in 1980, *see* 29 C.F.R. § 1910.93a(b)(2) (1972), *recodified as* 29 C.F.R. § 1910.1001 (1975), TVA set a standard for permissible levels at 5 fibers per cubic centimeter.<sup>196</sup>

Second, TVA failed to follow mandatory directives governing the monitoring of each employee's exposure to asbestos. The 1972 OSHA asbestos standard provided that “[a]ll determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400–450x (magnification) (4 millimeter objective) with phase contrast illumination,” and that monitoring should occur within six months of publication of the asbestos standard, and repeated every six months for exposed employees. 29 C.F.R. §§ 1910.93a(e), (f) (1972), *recodified as* 29 C.F.R. § 1910.1001 (1975) (alteration supplied). Further, the 1987 TVA guidelines provided that employees with “any exposure” to asbestos must be monitored to determine their exposure levels.<sup>197</sup> Despite those requirements, no one within the Browns Ferry Nuclear Plant conducted an analysis of the airborne concentrations of asbestos fibers prior to October of 1979. Instead, the concentration of airborne asbestos fibers to which TVA employees were exposed was determined by a visual inspection conducted by supervisory personnel, who were not provided objectively meaningful

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<sup>196</sup> *See* Plaintiffs' Exhibit 534.

<sup>197</sup> Plaintiffs' Exhibit 542, at 6-7.

criteria to consider in “estimating” the extent of exposure. Further, TVA only conducted asbestos air monitoring of *three employees* at Browns Ferry in 1980, *eight employees* in 1981, and *five employees* in 1982. A 1988 internal review determined that asbestos monitoring within the nuclear facility “ha[d] been very limited and [did] not meet the monitoring requirements of the OSHA asbestos standard.”<sup>198</sup>

Finally, TVA failed to provide either protective equipment and clothing, or separate lockers and shower facilities for employees exposed to asbestos fibers as required by OSHA regulations and TVA’s own internal policies. For employees whose exposures exceeded the limits prescribed by OSHA regulations, TVA was required to provide special work clothing such as coveralls, changing rooms, and two lockers for each exposed employee, and launder asbestos-contaminated clothing within the Browns Ferry facility, in order to prevent asbestos fibers exceeding the prescribed exposure limits from being carried off TVA property on the clothing of employees. 29 C.F.R. §§ 1910.93a(d) (1972), *recodified as* 29 C.F.R. § 1910.1001 (1975). Further, the 1974 TVA asbestos policy stated that “[e]mployees engaged in . . . the removal or demolition of asbestos insulation or coverings . . . shall be provided respiratory protection and special clothing.”<sup>199</sup> That same policy also required employees exposed to asbestos in concentrations greater than ten fibers per

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<sup>198</sup> Plaintiffs’ Exhibit 536, at 7 (alterations supplied).

<sup>199</sup> Plaintiffs’ Exhibit 528, at 988 (alteration supplied).

cubic centimeter to be provided with special clothing, changing rooms, two lockers, and separate shower facilities, and employees exposed to undetermined concentrations of asbestos were required to be provided with protective clothing until tests established that their work activities did not expose them to concentrations above ten fibers per cubic centimeter.<sup>200</sup> TVA's 1979 Division of Power Safety and Hazard Control Manual provided that "[e]ach employee exposed to airborne concentrations of asbestos shall be provided with two separate lockers. One locker shall be used for street clothes and must not be contaminated with asbestos."<sup>201</sup> That policy did not set a permissible exposure limit for application in the Browns Ferry Nuclear Plant.<sup>202</sup> A 1979 internal plant memorandum stated that "[l]ocker and shower facilities separate from other plant facilities should be provided for all insulators and designated cleanup laborers."<sup>203</sup> Despite those federal requirements and internal regulations, TVA did not provide laborers with protective clothing, separate changing rooms, lockers, or showers, unless they were working in a C-Zone.<sup>204</sup> As previously shown, however, asbestos was present above the threshold limits in places other than

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<sup>200</sup> *Id.* at 988-90.

<sup>201</sup> Plaintiffs' Exhibit 529, at 2966 (alteration supplied).

<sup>202</sup> Trial Transcript, Day 2, at 73-74.

<sup>203</sup> Plaintiffs' Exhibit 530 (alteration supplied).

<sup>204</sup> *See* Trial Transcript, Day 2, at 13, 16; Plaintiffs' Exhibit 530.

C-Zones.<sup>205</sup>

TVA contends that it is not sufficient for plaintiffs “to merely show conduct in violation of a rule; they must also show that Mrs. Bobo’s exposures resulting from that non-discretionary conduct *caused* her illness.”<sup>206</sup> The court has already determined, however, that plaintiffs demonstrated by a preponderance of the evidence that: (1) James Bobo worked within areas of the plant where he was exposed to asbestos in excess of the permissible exposure limits; (2) notwithstanding this, TVA failed to provide him the required protective clothing, changing rooms, separate lockers, separate shower facilities, or in-plant laundry services; (3) as a result, he carried asbestos fibers home on his work clothes; and (4) Mrs. Bobo was exposed to those same fibers when laundering those clothes.<sup>207</sup>

In summary, a governmental agency retains discretion to adopt rules and guidelines as it sees fit, but once it decides to promulgate mandatory regulatory guidelines, its failure to comply with those rules exposes the agency to liability. Once promulgated, an agency should be required to follow its own, mandatory procedures and guidelines. For all of the foregoing reasons, TVA is not shielded from liability by the discretionary function doctrine.

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<sup>205</sup> *See supra* Part III.C.

<sup>206</sup> Doc. no. 209 (TVA’s Post-Trial Brief), at 17.

<sup>207</sup> *See supra* Parts III.C., III.E.

## F. Damages

Plaintiffs seek the following damages for the injuries sustained by Barbara Bobo as a result of TVA's negligence: \$547,008.93 in medical bills for the diagnosis and treatment of her disease, and \$8,000,000 for physical pain, suffering, mental anguish, and loss of the enjoyment of life.<sup>208</sup> TVA is entitled to an offset in the amount of \$136,176.37, representing the aggregate amount received by plaintiffs or their decedent from settlements with various asbestos bankruptcy trusts.<sup>209</sup> Additionally, as of February 9, 2015, plaintiffs had seven pending claims with other asbestos bankruptcy trusts, and potential claims against other bankrupt entities that may or may not establish trusts for the compensation of asbestos victims. In the event plaintiffs enter into additional settlements with such trusts, or judgment should be entered in favor of plaintiffs against such entities, TVA may be entitled to additional offsets in the aggregate amount of such settlements or judgments.<sup>210</sup>

Although Barbara Bobo died prior to trial, plaintiffs are entitled to recover damages under the Alabama survival statute for the personal injuries that their mother suffered before her death. *See* Ala. Code § 6-5-462 (1975).<sup>211</sup> In Alabama, "all

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<sup>208</sup> *See* doc. no. 191 (Pretrial Order), at 6.

<sup>209</sup> Doc. no. 201 (Agreed and Stipulated Facts), ¶ 80.

<sup>210</sup> *Id.* ¶ 81.

<sup>211</sup> *See supra* note 12.

injurious residuals proximately resulting from permanent injury negligently inflicted by one party upon another, properly plead and proved, are due to be considered by the [court] in arriving at its verdict.” *Beloit Corp. v. Harrell*, 339 So. 2d 992, 998 (Ala. 1976) (alteration supplied). Those “injurious residuals” include mental anguish, physical pain and suffering, impaired health, diminished earning or working capacity, mutilation or disfigurement, and medical expenses. *Id.* (citing *Alabama Great Southern Railroad Co. v. Flinn*, 74 So. 246 (Ala. 1917)).

Mrs. Bobo’s medical expenses for medical care, services, and treatment of her mesothelioma totaled \$537,131.82. Mrs. Bobo’s health insurers satisfied virtually all of those expenses (*i.e.*, \$532,131.82), but Medicare asserts a subrogation claim in the amount of \$82,793.81 for its payments to Mrs. Bobo’s healthcare providers. TVA contends that, “[b]ecause Plaintiffs have no obligation to pay amounts that were written off, any judgment awarding damages for medical expenses that may be entered in their favor should be limited to the amount of the Medicare subrogation claim of \$82,793.81, plus [Mrs. Bobo’s] out-of-pocket expenses of \$5,000.00.”<sup>212</sup> This court disagrees: “damages recoverable by plaintiff[s] should not be diminished by the fact that [they have] been wholly or partially indemnified for [their] loss by hospital insurance to which defendant did not contribute.” *Roland v. Krazy Glue*,

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<sup>212</sup> Doc. no. 209 (TVA’s Post-Trial Brief), at 20 (alterations supplied).

*Inc.*, 342 So. 2d 383, 386 (Ala. Civ. App. 1977) (alterations supplied). Accordingly, the court will award plaintiffs the full amount of Mrs. Bobo’s medical expenses: \$537,131.82.

Plaintiffs contend that they also are entitled to recover damages to compensate for Mrs. Bobo’s permanent injury and disfigurement.<sup>213</sup> The Pretrial Order, however, does not include a damages claim for permanent injury and disfigurement.<sup>214</sup> Under the Federal Rules of Civil Procedure, “a final pretrial order . . . supersede[s] all prior pleadings and ‘control[s] the subsequent course of the action.’” *Rockwell International Corp. v. United States*, 549 U.S. 457, 474 (2007) (quoting former Federal Rule of Civil Procedure 16(e)) (alterations supplied).<sup>215</sup> As plaintiffs concede, theories of damages not included in the Pretrial Order are waived, even if they appeared in the complaint.<sup>216</sup> Accordingly, the court will not award plaintiffs any amount as damages for Mrs. Bobo’s permanent injury and disfigurement.

Finally, plaintiffs are entitled to recover damages for Mrs. Bobo’s mental anguish, physical pain and suffering, and loss of the enjoyment of life. The Supreme

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<sup>213</sup> Doc. no. 211 (Plaintiffs’ Proposed Findings of Fact and Conclusions of Law), at 28-29.

<sup>214</sup> Doc. no. 191 (Pretrial Order), at 6.

<sup>215</sup> Federal Rule of Civil Procedure 16(e) was amended in 2007, after the *Rockwell* opinion, “as part of the general restyling of the Civil Rules to make them more easily understood and to make style and terminology consistent throughout the rules. These changes [were] intended to be stylistic only.” Fed. R. Civ. P. 16, 2007 Advisory Committee Notes (alteration supplied).

<sup>216</sup> See doc. no. 213 (Plaintiffs’ Response to TVA’s Post-Trial Brief), at 13.

Court of Alabama has long held that

“[t]here is no fixed standard for ascertainment of compensatory damages recoverable . . . for physical pain and mental suffering” and that “the amount of such [an] award is left to the sound discretion of the jury, subject only to correction by the court for clear abuse or passionate exercise of that discretion.”

*Black v. Comer*, 38 So. 3d 16, 27 (Ala. 2009) (quoting *Daniels v. East Alabama Paving, Inc.*, 740 So. 2d 1033, 1044 (Ala. 1999)) (alterations and omissions in original). Because this case was tried without a jury, the court assumes the role of finder of fact. See, e.g., *Prickett v. United States*, 111 F. Supp. 2d 1191, 1192 (M.D. Ala. 2000), *aff'd without opinion*, 268 F.3d 1066 (11th Cir. 2001). Thus, the ascertainment of damages for pain and suffering is left to the court’s sound discretion.

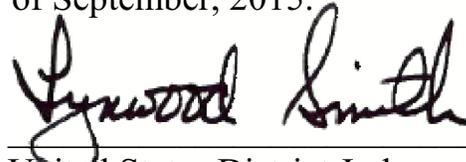
Here, Mrs. Bobo was diagnosed with malignant pleural mesothelioma in November of 2011, and was subjected to numerous rounds of chemotherapy from January through April of 2012. She referred to the initial rounds of that treatment as the “Red Devil,” because she experienced many adverse side effects, including reduced appetite, pain when drinking fluids, and spitting up raw flesh. In June of 2012, Dr. David Sugarbaker removed one of Mrs. Bobo’s ribs and the pleural lining of one of her lungs. She was hospitalized for 22 days following that procedure, and then was discharged to begin rehabilitation. Mrs. Bobo died on September 7, 2013. The court finds that \$3,000,000 is an appropriate award for the physical pain and

suffering Mrs. Bobo endured during her mesothelioma treatment, and will award plaintiffs that amount in compensatory damages.<sup>217</sup>

## V. CONCLUSION

For the reasons stated in this opinion, the court finds in favor of plaintiffs. A Judgment consistent with this memorandum of opinion will be entered contemporaneously herewith.

**DONE** and **ORDERED** this 29th day of September, 2015.

  
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United States District Judge

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<sup>217</sup> The court notes that this award is consistent with other damage awards for pain and suffering in similar mesothelioma cases. *See, e.g., Crane v. Hardick*, 722 S.E.2d 610, 622 (Va. 2012) (affirming award of \$2,000,000 in damages for pain and suffering in a mesothelioma case where the plaintiff was diagnosed with the disease in February of 2007, and died in March of 2009). *See also Goede v. Aerojet Gen. Corp.*, 143 S.W.3d 14, 27 (Mo. Ct. App. 2004) (affirming award of \$2,000,000 in damages for pain and suffering in a mesothelioma case where the plaintiff's mesothelioma manifested in May of 2001, and she died in March of 2002).