restricted the kinds of products which could be manufactured from it, and limited the uses to which those products could be put—primarily to the enormous shipbuilding program and other defense needs.[12] Navy orders for asbestos-containing products consistently were assigned the highest priority ratings established under the Board's priority and allocations system.[13]

B. The Government Decided The Terms Of Its Asbestos Material Specifications Based On Its Own Needs, Experience And Expertise

During the massive build-up of arms immediately prior to Pearl Harbor and throughout World War II, the Navy required and used asbestos-containing materials aboard its ships. Throughout this period, the Navy specified that insulation pipe coverings and blocks, cements, felts, and lagging cloths "shall" contain or consist of varying percentages of "asbestos fiber." Deft. Adm. ¶ 55 (App. 10765).[14] Moreover, in the case of pipe covering and block, the Navy requested the development of custom products—lighter and less dense insulation materials—by Manville and others, for which there had been no prior commercial demand, and which required amo-

---

[12] PX 478 (App. 15036-38); 698 (App. 15950-51); 799 (App. 16134-37); 1160 (App. 20325-60); 451 (App. 14571); 646 (App. 15874-75); 687 (App. 15916-18); 459 (App. 15012); 735 (App. 16009); 938 (App. 19104-28); Deft. Adm. ¶¶ 198-208 (App. 10886-94); 639 (App. 11195); Gordon Tr. (App. 877-78).

[13] PX 836 (App. 16283-88); 1029 (App. 19231-37); Deft. Adm. ¶¶ 189 (App. 10878); 195 (App. 10882-83); 213 (App. 10898); Gordon Tr. (App. 871-81); Connolly Dep. Tr. (App. 50220-23).

[14] PX 29 (App. 13000-01); 35 (App. 13019-78); 86 (App. 13141-43); 105 (App. 13201-07); DX 10 (App. 30005); 12 (App. 30044-45); 22 (App. 30052-53); 25 (App. 30058-63); 62 (App. 30167); 78 (App. 30189-91); 91 (App. 30221-23); 100 (App. 30270-72); 148 (App. 30557-59); Deft. Adm. ¶¶ 53 (App. 10764); 55 (App. 10765-66); 57 (App. 10767-68); 58 (App. 10768-69); 59 (App. 10769); 60 (App. 10769-70); 61 (App. 10770-71); 63 (App. 10771-72).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/1

site, a stronger, more brittle and coarser type of asbestos fiber which produced a dustier material.[15]

During the 1930s the Navy tightened its requirements for the physical characteristics of thermal insulation products, including strength, heat conductivity, density, shock and vibration endurance, abrasion resistance, moisture absorption and thickness, making it more difficult for manufacturers to supply complying materials.[16] Without contradiction, Manville's thermal insulation expert, Donald Wingerter,[17] testified that these Navy actions required a "substantial" increase in the amount or length of asbestos fiber in products for delivery to the Navy.[18] Many of these changes to Navy specifications were the result of the increased temperatures generated by improving Navy ship propulsion machinery, and of inter-

---

[15] PX 128 (App. 13717-20); 130 (App. 13721-25); 140 (App. 13732-33); 161A (App. 13761-63); 379 (App. 14485-87); 1672 (App. 26970-72); 1694 (App. 27003-07); 1738 (App. 27108-32); Wingerter Tr. (App. 3884-85, 3893-94, 3916-23, 3933, 3940, 3969-70, 3974-77, 3982-86, 3988, 4007-14, 4022, 4039-42, 4495-98, 5229-30, 5252-55).

[16] PX 86 (App. 13141-43); 144 (App. 13734-36); 331 (App. 14451-56); 379 (App. 14485-87); Bettoli Tr. (App. 3382-83); Wingerter Tr. (App. 3945-48, 4956-57, 3962-64, 3966-68, 3997-99, 4016-17, 4021-22, 5229-30, 5257-62); Wilkinson Dep. Tr. (App. 51210-12).

[17] Donald Wingerter has over 30 years of quality control engineering experience in the manufacturing and testing of asbestos and other thermal insulations, and in Navy specification compliance of such products. In preparation for his testimony at trial, he undertook extensive review of research and development files relating to the relevant products and the applicable Navy specifications. Wingerter Tr. (App. 3972-81). He was qualified by the trial court as an expert in the design and manufacture of Manville's asbestos-containing products and the relationship between the products and the Navy specifications immediately prior to and during Worold War II. *Id.* (App. 3883-84). There was no Government witness comparably qualified.

[18] PX 1652 (App. 26878-79); Wingerter Tr. (App. 4002-07, 4010, 4485-87, 5229-30, 5256-57).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/2

national treaty requirements limiting warship tonnage.[19] During World War II, moreover, the Navy continued to tighten its engineering and physical characteristics requirements in the insulation specifications, again making it more difficult for manufacturers to supply complying materials.[20]

The uncontradicted documentary evidence and the uncontradicted testimony of Manville's experts—Messrs. Hauschildt, Bettoli and Wingerter—showed that the relevant specifications in this case were *mandatory design specifications* which *required* that the products delivered to it contain asbestos.[21] During the 1930s and throughout World War II, many of the relevant specifications explicitly prescribed asbestos fiber content. Other specifications implicitly required asbestos, by virtue of two undisputed facts. First, only with asbestos fiber was it possible for materials to meet the detailed physical engineering properties and characteristics the Navy prescribed. "[T]he Navy specifications were such that [a manufacturer] had no alternative because of the narrow [properties] that we were given, but to use asbestos. . . . [Manville] had the formula dictated to [it] by the tightness of the specification." Wingerter Tr. (App. 4304). Second, those materials which contained asbestos were

---

[19] PX 99 (App. 13150-67); 154 (App. 13752-54); Couch Tr. (App. 2877); Hauschildt Tr. (App. 2988-94); Wilkinson Dep. Tr. (App. 51161-62); Deft. Adm. ¶ 282 (App. 10949).

[20] PX 305 (App. 14433-39); 331 (App. 14451-56); 355 (App. 14472-77); 356 (App. 14478-79); 379 (App. 14485-87); 671 (App. 15909-11); 740 (App. 16015-16); 1087 (App. 19569); 1828 (App. 27668); DX 483 (App. 31369-500); 571 (App. 31980-85); Wingerter Tr. (App. 4028-29, 4031-36, 4051, 4055-62, 4077-89, 4121-32, 5229-30).

[21] Bettoli Tr. (App. 3326-31, 3443-44); Wingerter Tr. (App. 3902-06, 3940, 4022, 4050, 4076, 4092, 4118-20, 4144, 4161, 4167, 4169-74, 4177-83, 4185-86, 5214). *See also* PX 684 (App. 15913-15); 1012 (App. 19227-30); 1854 (App. 27716-20); 441 (App. 14545-52); 503 (App. 15153-54); DX 457 (App. 31323).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/3

the only kinds of materials the Navy had previously approved through Navy testing.[22]

These Navy specifications were expressly incorporated by reference into material procurement contracts, and the Navy's ship specifications and ship construction contracts.[23] Wartime material procurement contracts specified that the manufacturers "shall furnish and deliver all supplies . . . in strict accordance with the specifications . . . which are made a part hereof."[24] Extensive uncontradicted evidence further showed—based on first-hand observation—that asbestos materials were actually used aboard virtually every Navy ship built and repaired during World War II.[25]

At closing argument, the Government conceded that the relevant specifications in this case were design specifications, but claimed that the design was not done by the Navy but rather by Manville or other manufacturers. Tr. (App. 10449-50). The only grounds for this assertion were that some similar products had existed before

---

[22] PX 2104 (App. 28918); 2106 (App. 28920); 144 (App. 13734-36); 331 (App. 14451-56); 355 (App. 14472-77); DX 571 (App. 31980-85); Wilkinson Dep. Tr. (App. 51163-64); Hauschildt Tr. (App. 2963-65, 2969-70); Bettoli Tr. (App. 3285-87, 3292-93, 3299-3318, 3321-25, 3376-79, 3437-38, 3440-43); Wingerter Tr. (App. 3962-64, 3966-68, 3991-96, 4025-27, 4055-57, 5229-30).

[23] PX 259 (App. 13955-60); 172 (App. 13766-83); 116 (App. 13693-708); 243 (App. 13909-27); 2009 (App. 28637-52); Wilkinson Dep. Tr. (App. 51153-54); Couch Tr. (App. 2905-09); Hauschildt Tr. (App. 3005-09, 3012-19, 3027-32, 3034-47); Wingerter Tr. (App. 3989).

[24] Deft. Adm. ¶¶ 582 (App. 11130-33); 583 (App. 11133-36). *See also*, Deft. Adm. ¶¶ 584 (App. 11136-40); 587 (App. 11141-46); 589 (App. 11147-54).

[25] Couch Tr. (App. 2869-72, 2899-900, 2902-05, 2912); Hauschildt Tr. (App. 2963-65, 2969-70, 3010-11, 3022-23, 3057-59, 3065-66); Wilkinson Dep. Tr. (App. 51157-61); Goldwater Tr. (App. 4920); Anderson Dep. Tr. (App. 50030-31, 50333); Carter Tr. (App. 4582, 4596, 4600); Downey Tr. (App. 3803-04, 3815); Drinan Tr. (App. 5997); Legate Tr. (App. 715-16, 753); Olson Dep. Tr. (App. 50796-97); Orlando Tr. (App. 4633); Seacrist Dep. Tr. (App. 50714); Shulman Dep. Tr. (App. 50899-901); Smith Dep. Tr. (App. 51006-07).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/4

the Navy made its own design decisions, and that in some cases Manville or other manufacturers had submitted comments and samples in response to Navy requests regarding the Navy's drafts of specifications. *Id.*

The thermal insulation specifications at issue in this case were the product of substantial Navy experience and extensive expertise residing in the technical engineering sections of the Navy's Bureau of Ships.[26] "[T]he Navy determined its own specifications"; it did not accept commercially available materials unless they met Navy demands. Hauschildt Tr. (App. 3073-74). Navy specifications for those materials "were much more restrictive," and contained "very much more stringent" and "greater" requirements than those for materials used "onshore."[27] As stated by a Navy officer, Navy ship material requirements were "unique . . . because of the way the material was to be used and the hazards that the material may be placed under." Wilkinson Dep. Tr. (App. 51160-62). The Navy's *requirements*—not the characteristics of products it tested—were the driving force which determined the content of the Navy's specifications. The Navy "didn't change their requirements" to accommodate existing products. Bettoli Tr. (App. 3418-21, 3423). Even Congress' Truman Committee remarked in 1943 that in building the battle fleet, the Navy did not relax "[i]ts extremely rigid and strict standards" for material and construction.[28]

The Navy made and was responsible for every decision about the content and form of the design specifications at issue, including the requirements that the materials contain asbestos. For these specifications and others, the

---

[26] Hauschildt Tr. (App. 2997-99, 3021); Bettoli Tr. (App. 3444); Birnbaum Tr. (App. 9358).

[27] PX 160 (App. 13755-56); 1595 (App. 26814); Bettoli Tr. (App. 3388); Wingerter Tr. (App. 4570-71, 5239-42); Tower Tr. (App. 6848-49).

[28] PX 891 (App. 16515, 16535); Deft. Adm. ¶ 300 (App. 10989-90). *See also* DX 988 (App. 33715, 33722); Connolly Dep. Tr. (App. 50170-71, 50234-37).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/5

Navy technical personnel controlled the preparation process. The Navy initiated the draft specifications based on its engineering test findings, solicited and evaluated industry suggestions, and wrote the requirements and details of the final specifications it published.[29] Any manufacturer suggestions inconsistent with Navy interests and needs were *not* adopted by the Navy. The Navy "always check[ed] these things out" by "complete testing." Wingerter Tr. (App. 4341); Birnbaum Tr. (App. 9353).

As stated by a Navy officer who worked in the Bureau of Ships during the War, the "specifications were written by . . . the Bureau of Ships" technical sections. Industry's input in setting the specifications was "None." Industry acted "[i]n an advisory capacity only." Wilkinson Dep. Tr. (App. 51150-51).

The evidence at trial also showed the "high degree of sophistication," technical ability and competence of the Navy to make its decisions in this thermal insulation area. Wingerter Tr. (App. 5252). Before and during World War II, the "knowledgeable" (Wingerter Tr. (App. 3902)) and "very competent group" (Bettoli Tr. (App. 3354)) of technically skilled people at Navy facilities devised their own tests and testing equipment, evaluated insulation materials, and through that testing decided either to continue the existing physical characteristic requirements of specifications or "modify them according to the results obtained . . ."[30] "[T]he Navy

[29] PX 503 (App. 15153-54); 1030 (App. 19238-318); Hauschildt Tr. (App. 3000-04); Bettoli Tr. (App. 3445); Birnbaum Tr. (App. 9311-14).

[30] PX 31 (App. 13002-08); 33 (App. 13009-18); 84 (App. 13137-40); 99 (App. 13150-67); 154 (App. 13752-54); 160 (App. 13755-56); 1030 (App. 19238-318); 1717 (App. 27071-72); 2113 (App. 28932-34); 2114 (App. 28935-36); DX 49 (App. 30080-120); 79 (App. 30192-99); 78 (App. 30189-91); 174 (App. 30595-620); Bettoli Tr. (App. 3354); Wingerter Tr. (App. 3899-902, 4016-18, 4062-63, 4120-21, 4131-33, 5229-30, 5248-52); Birnbaum Tr. (App. 9375-76); Deft. Adm. ¶¶ 282 (App. 10949); 287 (App. 10952);

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/6

set up special tests for the manufacturers to meet because [the Navy] had a very special need." Wingerter Tr. (App. 4336). "The Navy . . . [was] very intelligent about what went into these products" and was "very discriminating" in evaluating industry suggestions by measuring them against "the Navy's needs."[31] Manville in no way controlled or dominated the preparation of the Navy's thermal insulation specifications.[32]

The record amply showed the Navy's early sophistication in thermal insulation, and that the Navy did not rely or depend upon manufacturers for expertise in this field.[33] The Navy's Engineering Experiment Station in Annapolis, where its work in this field was concentrated, was founded in 1908. Deft. Adm. ¶ 289 (App. 10953-55). Within ten years, the Navy believed that it was

> *well-acquainted* with the relative conductivities of magnesia and asbestos, . . . The Bureau [of Steam Engineering] is *fully aware* of the function of long fiber asbestos in pipe covering . . . to give the necessary structural strength.

PX 1584 (App. 26760-61) (emphasis added); Wingerter Tr. (App. 5231-32). The Navy pointedly noted that it "resent[ed] the imputation that it [was] influenced by the 'machinations' of rival manufacturers, or others, in drawing up its specifications." PX 1584 (App. 26760-61).

In later years the Navy's self-reliance and expertise continued to grow. Prior to World War II, for example,

---

289 (App. 10953-55); 290 (App. 10955-56); 291 (App. 10956-57); 292 (App. 10957); 293 (App. 10958).

[31] Wingerter Tr. (App. 4336, 4342-44). *See also* Gordon Tr. (App. 826-27).

[32] Wingerter Tr. (App. 3968-70, 3999, 4018-21, 4027-29, 4034-36, 4045-52, 4071-74, 4083-85, 4143-46, 4161, 4166, 4171-73, 4179-82, 5229-30).

[33] *See, e.g.*, PX 1584 (App. 26760-61); 1595 (App. 26814); 71 (App. 13132-33); 154 (App. 13752-54); Wingerter Tr. (App. 5232-38); Wilkinson Dep. Tr. (App. 51156-59).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/7

the Navy told an asbestos product manufacturer that it "was not policy of the Navy department to purchase materials simply on a manufacturer's guarantee." Similarly, the Navy stressed the extent of its own knowledge when it told another manufacturer that "[t]he Navy does not prepare specifications in the interest of any manufacturing source. All changes in the specification are dictated by the necessities of the Naval Service, and are made after careful consideration." Deft. Adm. ¶ 278 (App. 10946).[34]

The Navy was "very knowledgeable in the [raw] materials that went into the thermal insulations" and "also knew processing of how these products were made." Wingerter Tr. (App. 5264-66). Moreover, the Government admitted that "the Navy had considerable research and development capacity" for "propulsion equipment, *materials*, and electronics equipment" aboard ships. "Staffed by Naval Officers and trained civilian specialists, having intimate knowledge of the practical aspects affecting *material* of sea-going vessels, laboratories under the cognizance of the Bureau of Ships," including the 1,000-man Engineering Experiment Station, were "equipped to deal with problems unique to the Navy."[35] As early as 1919, the Navy was conducting its own formulation tests on asbestos-containing insulations. Birnbaum Tr. (App. 9367-75); DX 49 (App. 30080-120). In one case, in response to a severe and "very critical" wartime shortage of Navy asbestos cloth, "the

---

[34] Further evidence of the Navy's expertise was shown in 1935 when the Navy modified its policy on chemical analyses to allow testing of certain materials at private laboratories. Significantly, heat insulating materials were expressly *excepted* from this modification. Such products "will *always* be tested in a Government laboratory." PX 84 (App. 13137-40) (emphasis added); Deft. Adm. ¶ 288 (App. 10952-53) (emphasis added).

[35] PX 154 (App. 13752-54); Deft. Adm. ¶¶ 289, 290 (App. 10953-55) (emphasis added); Birnbaum Tr. (App. 9107-09).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/8

Research and Development Section of the Navy designed a new product" for use aboard Navy vessels.[36]

Significantly, the Government's specifications witness admitted that Navy specification writers were responsible for reducing or eliminating known health hazards through revisions to specifications. Birnbaum Tr. (App. 9353-54, 9356).[37] *See also* DX 1006 (App. 33819-20). The Government's knowledge of actual shipyard asbestos health hazards was undisputed. *See infra* pp. 25-29. However, the specifications were not revised in any way to reduce them.[38]

The evidence presented by the Government showed only that the Navy tested materials submitted by some but not all manufacturers before the Navy decided the terms of its specifications, and that the Navy sought and received "comments" on Navy drafts of specifications from some but not all manufacturers.[39] The Government

---

[36] Deft. Adm. ¶¶ 211 (App. 10895-97); 301 (App. 10955-56) (emphasis added). As to the asbestos cloth shortage, *see also* PX 1160 (App. 20325-60); Deft. Adm. ¶¶ 209, 210, 212, 213 (App. 10894-98).

[37] Leon Birnbaum, the Government's only specification witness, was qualified by the trial court as an expert only on preparation of specifications generally. Birnbaum Tr. (App. 9126-27). He undertook no file research or interviews of anyone involved in the preparation of Navy specifications for thermal insulation products, and did not review any written materials other than those the Government attorneys selected for him. *Id.* (App. 9275-78, 9363-65). He did no analysis of Navy specification preparation process guidelines in effect before or during the War, (*id.* (App. 9316-17)) and offered no opinions as to the particular specifications at issue in the case.

[38] *See*, for example, the original specification for high-temperature cement and subsequent revisions. PX 105 (App. 13201-07); 210 (App. 13822-30); DX 1399 (App. 38602); 1400 (App. 38603); 1408 (App. 38612-13); 1118 (App. 34254-61).

[39] DX 83 (App. 30205); 86 (App. 30210-14); Wingerter Tr. (App. 4336-37). While manufacturers occasionally submitted samples, none of the specifications at issue here were "proprietary" in nature; all were design specifications. *See Jack Stone Co.* v. *United States*, 344 F.2d 370, 373-74 (Ct. Cl. 1965); *Aerodex, Inc.*, 1962 BCA ¶ 3492 (ASBCA 1962).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/9

offered no evidence that the Navy was incompetent or lacked the technical and scientific expertise to evaluate the "comments" of manufacturers, or that the Navy was incompetent to understand the material characteristics required by naval operations at sea. The Government failed to offer any evidence that any manufacturer dictated or set the terms of Navy specifications, that the Navy process called for any outside approval of Navy specifications, or that any manufacturer in fact wrote even a draft of the specifications published by the Navy. The Government offered no evidence that the Navy at any time needed or was dependent upon the expertise of anyone else in setting the terms of its material specifications.[40] In short, the Government offered no evidence that any manufacturer had anything approaching a "decisive" role in developing the specifications at issue in this case. 13 Cl. Ct. at 123.

C. The Government Knew Of The Actual Asbestos Hazard Conditions In The Wartime Shipyards But Did Not Disclose This Information To Manville

From the 1880s on, the Navy was a major shipyard operator and user of asbestos-containing products in the construction and repair of naval vessels. Deft. Adm. ¶ 53. As a result, the Navy knew well before World War II that shipyard workers exposed to excessive levels of airborne-asbestos dust risked serious pulmonary injury. The Navy also knew at that time of effective preventive measures. In 1922, the Navy specifically included "Asbestos Workers" on its "Alphabetical List of Hazardous Occupations" in the *United States Naval Medical Bulletin*, and concluded that wet handling, exhaust systems, confining the dust-producing process, and respirators were "four effective methods that may be used to prevent the inhalation of dust generated during industrial processes" in its shipyards. PX 37 (App. 13079, 13083-84, 13096); Deft. Adm. ¶ 789 (App. 11282-83). *See also* PX 1954 (App.

[40] To the contrary, *see* Bettoli Tr. (App. 8446-47).

Published by AsbestosClaims.Law
asbestosclaims.law/library/24552/10