

FILE NAME: Texaco (TEX)

DATE: 2003 Oct 22

DOC#: TEX001

DOCUMENT DESCRIPTION: Legal - Declaration of Barry Castleman

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5 SUPERIOR COURT OF WASHINGTON FOR SKAGIT COUNTY

6 VIRGINIA JAMESON, Individually and as Personal
7 Representative of the Estate of RAY JAMESON,

8 Plaintiff,

9 v.

10 TEXACO, INC. et. al.,

11 Defendants.

No. 02-2-01069-8

**DECLARATION OF BARRY I.
CASTLEMAN, Sc.D.**

12
13 I, BARRY CASTLEMAN, declare and state as follows:

14 **BACKGROUND**

15 1. My name is Barry I. Castleman. I live at 4406 Oxford Rd., Garrett Park, Maryland
16 20896. My education consists of a Bachelor's Degree in Chemical Engineering from Johns
17 Hopkins University 1968. I have a Master's Degree in Environmental Engineering, which was
18 mainly in areas related to air pollution control from Johns Hopkins University, 1972. I have a
19 Doctor of Science Degree in Health Policy from Johns Hopkins School of Hygiene and Public
20 Health, 1985.

21 2. My professional experience goes back over 30 years in the area of asbestos and other
22 occupational and environmental health problems. My field is occupational and environmental
23

1 health policy, which is a branch of Public Health, mainly oriented towards the recognition of risk
2 factors and the prevention of disease from industrial activities.

3 3. The Doctoral degree was awarded for two years of course work, various examinations,
4 and the writing of a doctoral dissertation. The course work was mainly in the areas of
5 toxicology, epidemiology, biostatistics, physiology, and public health policy. These are the tools
6 that are used to understand how the body works and can be damaged by toxic substances, how
7 these effects can be identified by means of various studies of people, studies of animals
8 experimentally exposed, etc.

9 4. My Doctoral thesis was, Asbestos: An Historical Case Study of Corporate Response
10 to an Industrial Health Hazard, and is largely identical to a book published in 1984 by Prentice
11 Hall Law and Business called Asbestos: Medical and Legal Aspects (now in its 4th Edition,
12 1996). The doctoral thesis is an historical review of the asbestos problem as a public health
13 problem in society worldwide, but mainly in the United States. It encompasses a comprehensive
14 review of medical literature of all kinds, as well as other literature available in libraries and
15 published sources such as government publications, safety magazines, engineering journals,
16 trade magazines, insurance publications, encyclopedias, popular magazines, and newspapers.
17 The doctoral thesis also involved research based on unpublished government records. The
18 government records included workers' compensation claims files where claims had been made
19 by individuals alleging that they had asbestos-related diseases of the lungs, claims against
20 various companies that were their employers, some of which companies were also manufacturers
21 of asbestos insulation products these individuals has used in the course of their work.

1 5. In addition to published information of all kinds, I examined files, unpublished
2 information available from the U.S. government archives, the archives of scientists and the
3 archives of institutions that had worked for and with asbestos companies.

4 6. I have also looked at unpublished information which was obtained in legal discovery.
5 This included trade association minutes, corporate documents, and testimony of corporate
6 officials who were associated with asbestos hazards over the years – doctors, plant managers,
7 executives, and other people who were aware of events that transpired. For example, I have
8 reviewed documents obtained from the American Petroleum Institute (“the API”) and the
9 Industrial Health Foundation, formerly known as the Industrial Hygiene Foundation (“the IHF”).

10 7. In addition to published information and corporate knowledge that came primarily out
11 of legal discovery, I have also interviewed numerous current and former leading officials in the
12 field of industrial medicine and hygiene. They included physicians who were active in the field
13 of occupational medicine, such as Harold Stewart, who first published on asbestosis in 1931, and
14 Alfred Angrist, who first published on asbestos and lung cancer in 1942. They are both
15 pathologists. Another, Dr. Wilhelm Hueper, was a leading United States authority in the field of
16 occupational cancer and first director of the environmental cancer section of the National Cancer
17 Institute. Dr. Harriet Hardy, Dr. Thomas Mancuso, Dr. Gerrit Schepers, and others I have
18 interviewed were involved in the area of asbestos and health over the past decades.

19 8. I have acted as consultant for The National Science Foundation, The Environmental
20 Defense Fund, the Natural Resources Defense Council, and the European Commission. I have
21 provided testimony to United States congressional committees concerning the hazards of
22 asbestos and other toxic substances. I have also testified before United States congressional
23 committees regarding the development of asbestos knowledge. I have been a paid consultant to

1 the Office of Toxic Substances of the United States Environmental Protection Agency and have
2 performed research on environmental asbestos hazards. I have performed consulting work for
3 the United States Occupational Safety and Health Administration. In my research, I have
4 reviewed thousands of publications and documents pertaining to asbestos-related disease and
5 have interpreted and related the contents of the same.

6 9. I have testified as an expert witness in over two hundred (200) cases throughout the
7 nation on issues related to asbestos state-of-the-art and historical development of asbestos
8 knowledge.

9 **THE BODY OF KNOWLEDGE ABOUT ASBESTOS DISEASES**

10 ***ASBESTOSIS***

11 10. The originally published reports in the era of the modern asbestos industry came at just
12 before the turn of the last century, and the first reports in the English language were included in
13 the annual reports of the chief inspector of factories and workshops in Great Britain. The report
14 published in 1899, the report for the year 1898, talked about the observation of lung disease in
15 individuals who had worked in asbestos manufacturing plants and about the "evil effects of
16 asbestos dust."

17 11. The medical literature of asbestos disease mainly developed after the publication of a
18 case report in the British Medical Journal by Dr. Cooke, a pathologist in Britain in 1924. This
19 was called, "Fibrosis of the Lungs Due to the Inhalation of Asbestos Dust." Dr. Cooke reported
20 on the death of a 33-year-old woman who had worked off and on in asbestos plants from the age
21 of 13. According to Cooke, the scarring of her lung tissues was largely attributable to the
22 inhalation of asbestos in the course of her work. There followed a number of other reports in
23 British sources, and this is reflected as well in the United States in editorials of the Journal of the

1 American Medical Association, In one on January 14, 1928, called "Pulmonary Asbestosis,"
2 reference is made to Cooke's case and other reports on the disease now called asbestosis. The
3 Journal of the American Medical Association recommended that further attention be paid to this
4 disease, as it may well be occurring in the United States. The Journal of the American Medical
5 Association issued another editorial in 1930 about asbestosis, this time noting the asbestosis had
6 become a compensable occupational disease in Great Britain under the workers' compensation
7 law. The Journal of the American Medical Association was believed to have been read by 80%
8 of American physicians in those years, medical historians have written. Additionally, there were
9 additional reports of asbestosis published in the British Medical Journal, which is in every
10 medical library I have ever walked into. The reports mainly involved deaths of individuals who
11 were verified as having asbestosis by autopsy.

12 12. In 1930, a report was published by a physician, Dr. E.R.A. Merewether, and an
13 engineer named C. W. Price. Merewether and Price reported a survey that had been conducted
14 by the Factory Inspectorate in England, including 363 asbestos workers who were actively
15 employed. Of these individuals, 26% were found to have asbestosis. Merewether and Price
16 reported that the people longest exposed had the highest prevalence of the disease: 80% in
17 workers with 20 years or more in the industry. There were no cases of asbestosis in individuals
18 with less than five years, and Merewether referred to that phenomenon that the disease was
19 delayed in appearance and developed gradually over a period of years. It could in seven years be
20 substantially developed in the most severe cases, but more often 11 years or more would elapse
21 before the disease had become largely developed in exposed individuals. This is the time from
22 the onset of exposure. Merewether urged that workers be "educated to a sane appreciation of the
23

1 risk" to health posed by asbestos dust. Merewether's 1930 writings on asbestosis are among
2 those most often cited in the literature on asbestosis.

3 13. By 1932 there were 60 or more publications in print on asbestosis. These were noted
4 by way of reference in a bibliography published by the International Labor Organization in 1932.
5 These publications continued to emerge from many countries. The first cases of asbestosis in the
6 United States were reported in 1930. Asbestosis was also described in an article in the trade
7 magazine Asbestos in the United States in the March 1930 issue, amid numerous advertisements
8 from asbestos mining and manufacturing companies.

9 14. In 1932, the first case of asbestosis in an asbestos product user was reported at a
10 conference held by the Industrial Commission of Wisconsin, proceedings of which were
11 published. Here, Dr. Albert Russell of the United States Bureau of Mines described an
12 individual who had worked maintaining the insulations on pipes in a government hospital and
13 had been diagnosed as having asbestosis and had been compensated by the government for
14 disability sustained from this asbestos condition. This is the first published product user case.
15 There were other cases reported in the United States in 1933 by Philip Ellman and also reported
16 by Ellman in 1934 in The British Journal of Radiology. Wood and Gloyne reported in 1934
17 reported on cases of asbestosis including a boiler riveter who would have been exposed to
18 asbestos because it was used as an insulation material on boilers. Wood & Gloyne's report was
19 called "Pulmonary Asbestosis: A Review of 100 Cases." That was published in The Lancet, the
20 world's oldest medical journal, in 1934. The Lancet is, like the British Medical Journal, a
21 general medical journal published in England and available very widely in medical libraries in
22 the English-speaking world. This article was widely cited in subsequent literature. Of the
23

1 hundred cases of asbestosis they reported on, the shortest duration of exposure in any case was
2 six months, in the case of two women who had worked in an asbestos plant.

3 15. Literature on asbestosis was substantially developed by 1935. The disease was shown
4 to have a distinctive pathological appearance with asbestos bodies, types of scarring that would
5 form around the asbestos fibers trapped in the lung tissues. This was commented upon a great
6 deal by pathologists in the 1920s. The disease was shown to have an identifiable radiological
7 appearance on chest X-ray distinctly different from such diseases as TB and silicosis. The
8 disease was also characterized by shortness of breath, which would become more pronounced as
9 the individual became more seriously affected by the disease.

11 *ALAN DOOLEY AND THE PENNSYLVANIA STUDY*

12 16. In 1934 and 1935, the Industrial Hygiene Section of the Pennsylvania Department of
13 Labor and Industry published a report on asbestosis in the asbestos fabricating industry in the
14 state. This article was called Asbestosis, published by William B. Fulton and three of his
15 coworkers at the Pennsylvania Department of Labor and Industry. Alan Dooley, who would
16 become the Texas Company's lone industrial hygienist from 1947 through the 1950s and 1960s,
17 was one of Fulton's co-authors.

18 17. One-fourth of the workers examined by Fulton, Dooley and their team, had asbestosis.
19 Their article included an impressive bibliography of 125 references to asbestos-related disease
20 previously published in journals in the United States, England, France, Italy, Germany and other
21 countries. Among the references cited by Fulton, Dooley et. al. were the historic 1930 report by
22 Merewether and Price for the British government and the version published later that year in the
23 US in the Journal of Industrial Hygiene. The Merewether reports made recommendations for the

1 control of asbestos dust in asbestos plants, recommended periodic medical examinations of
2 workers exposed to this dust, recommended dust suppression measures in processes involving
3 the use of asbestos, and noted the hazards of asbestos insulation work in shipyards. The
4 Pennsylvania study was one of the first surveys of this kind in the United States similar to that
5 which had been done by Merewether and Price and published in Great Britain and the United
6 States separately in 1930.

7 18. The Pennsylvania study also included an effort to relate dose and response. The
8 authors had sampled the exposure of the workers to dust in four asbestos plants, including one
9 that produced asbestos containing insulation known as 85% Magnesite, and found that, overall,
10 average concentrations of dust could be broken down into three groups that varied from 4.64
11 million particles per cubic foot up to 44 million. Asbestosis was reported in all three groups,
12 with the prevalence and severity of disease greater in the more heavily exposed groups. But no
13 level of exposure was found to be free of the disease, including levels below 5 million particles
14 per cubic foot. In summary, in the Pennsylvania study at least 25% of the workers were
15 diagnosed as having asbestosis and levels of exposure even below 5 million particles per cubic
16 foot were found to cause asbestosis. Alan Dooley, who would become Texaco's industrial
17 hygienist for many years, was a co-author of this report.

18 19. In 1938, a study similar to the Pennsylvania study was done by the Public Health
19 Service, including an effort to account for workers who had been discharged before the Public
20 Health Service was admitted to the North Carolina asbestos textile plants to do the study. An
21 estimated asbestosis rate in the workplace was given as 27.5%. The report recommended that
22 dust exposure in asbestos plants be limited to 5 million particles per cubic foot. This guideline
23

1 was recommended as a tentative occupational exposure limit, though it was noted that the
2 Pennsylvania study had found cases of asbestosis at that level of exposure.

3 20. By the mid 1930s, cases of asbestosis were found not only among workers in asbestos
4 fabricating plants, but also among users of some asbestos products, mainly insulation products
5 such as these used by insulation workers.

6 21. Another source of information about asbestos during this period was the National
7 Safety Council, a national organization founded in 1912 as management's response to the
8 industrial safety issue. Starting in the 1930's, the National Safety Council published numerous
9 articles, pamphlets and other materials concerning the hazards of asbestos. Many of the annual
10 NSC annual "congresses" included forums and discussions about dust disease. The
11 "transactions" of these meetings were automatically mailed to the industrial members. For
12 example, at the 21st Annual Safety Congress in 1932, Dr. Leroy Gardner presented a paper
13 entitled "The Effects of Mineral Dusts" that discussed asbestos dust as a lung hazard.
14 Subsequently, at the 23rd Annual Safety Conference in 1934, Dr. Gardner delivered another
15 paper entitled "Types of Dust That Cause Occupational Diseases." That paper noted that "the
16 only other type of dust which is generally recognized as a cause of severe pulmonary injury is
17 asbestos, a silicate of magnesium."

18 22. Records of the National Safety Council indicate that Texas Company officials were
19 members, participants and even newsletter editors for the Council going back as far as the 1930s.
20 For example, NSC documents from the early 1930s demonstrate that a Texas Company official
21 V.R. Currie was a Past General Chairman Of the Petroleum Section of National Safety Council.

22 23. By the late 1930s, at least one company in the oil refining business was well aware of
23 the dangerous propensities of asbestos and the existence of asbestos related diseases. In 1937, an

1 industrial hygienist for Standard Oil of New Jersey (Roy Bonsib, Chief Safety Inspector)
2 authored a document entitled Dust Producing Operations In The Production Of Petroleum
3 Products And Associated Activities. In my opinion, this report establishes the "state of the art"
4 concerning a variety of dust hazards in refining operations generally, including for asbestos dust.
5 For example, the Bonsib report described a variety of dust producing operations typically
6 occurring in petroleum refining operations, including the use of 85% Magnesia insulation (15%
7 asbestos) to insulate steam lines. It specifically stated that insulating 12 inch steam lines with
8 85% magnesia created "dust concentrations considered to high for working without adequate
9 protection." It also stated that "any atmosphere in which dust is visible to the naked eye is
10 certainly too dusty to be breathed with safety by human beings, and the wise, farsighted, human
11 employer will immediately start to decrease the dust content in any atmosphere where dust is
12 visible." The Bonsib report identified asbestosis as a recognized disease and stated that asbestos
13 dust, with its fibrous particles, did not seem to be readily handled by the protective mechanism of
14 the lungs. The report also called for specific measures to reduce dust hazards in refineries -
15 including the use of respirators, the isolation of dusty processes and the use of wet methods of
16 operation to suppress dust at the point of its origin.

17 24. In addition to all of this information that was available and known in the industrial
18 health and the scientific community in the 1930s and 1940s, it cannot go without mention that
19 Texaco's own documents produced in this case, and others, contain a statement by Alan Dooley,
20 then Texaco's manager of industrial hygiene, in a 1949 Industrial Hygiene Survey of the
21 Texaco's Port Arthur Works that indicates that he was well aware of the dangerous propensities
22 of asbestos and that it would cause injury to workers. Specifically, in a discussion in the report
23 about crushed 85% Magnesia insulation, Dooley made the following comment: "Asbestos dust,

1 if inhaled in sufficient amounts and for a prolonged period, will cause a lung fibrosis termed
2 "asbestosis".

4 ***ASBESTOS AND LUNG CANCER***

5 25. In 1935, another aspect of the hazard of asbestosis was identified with the publication
6 of medical case reports of asbestosis in combination with lung cancer. The first such reports
7 were published by Lynch and Smith in the United States in 1935 in the American Journal of
8 Cancer and by Dr. Gloyne in Great Britain in Tubercle in two separate reports in 1935 and 1936.
9 In these reports, the question was raised that chronic irritation of the lung tissues from asbestos
10 might be producing cancer as well as lung scarring already well identified as an asbestos-related
11 phenomenon.

12 26. There were additional reports of lung cancer in combination with asbestosis reported
13 by Egbert and Geiger at Yale in 1936, and Nordmann in 1938. An abstract of this last
14 publication appeared in the United States in the Journal of Industrial Hygiene & Toxicology, also
15 in 1938. The article was entitled "The Occupational Cancer of Asbestos Workers." The German
16 author, Nordmann concluded that asbestosis was definitely related to lung cancer, that lung
17 cancer was in fact an occupational disease of asbestos workers. Various features of the six cases
18 Nordmann knew of were tabulated to justify that. Nordmann noted, among other things, that the
19 prevalence of lung cancer among autopsied victims of asbestosis was one in six both in Germany
20 and Great Britain. This was very much higher than the prevalence of lung cancer in the general
21 population, which tended to be more like 1% or several percent at most. The high rate of lung
22 cancer among people dying with asbestosis would be a most consistent finding around the world.
23

1 27. There were additional publications of cases of lung cancer and asbestosis in 1939 in
2 the United States and in 1941 and 1942 in Germany. Holleb and Angrist reported in the
3 American Journal of Pathology on two individuals who had been pipe coverers (users of asbestos
4 products) diagnosed at autopsy as having both asbestosis and lung cancer. These were the first
5 cases of cancer and asbestosis in users of asbestos products published in the medical literature.
6 Holleb and Angrist tabulated a total of 10 cases of lung cancer in combination with asbestosis
7 that had been published in the United States, Britain, and Germany.

8 28. Of special interest in this case may be the fact that articles linking asbestos and cancer
9 appeared in the *Archives of Industrial Hygiene and Occupational Medicine* in the early 1950s.
10 Recently, volumes of this journal from 1951 to 1955 containing a stamp bearing the name
11 "Texas Company were located in the library of Lamar University in Beaumont, Texas. The
12 March, 1952 edition of this journal, which was in the Lamar library, contains an article by Dr.
13 Wilhelm Hueper entitled "Occupational Cancer Hazards In American Industries". In the article,
14 Dr. Hueper discusses the excessive incidence of lung cancer associated with asbestosis in a series
15 of 235 documented cases of asbestosis.

16 29. Dr. Wilhelm Hueper is an important figure in the history of the knowledge of
17 occupational cancer and in the development of the knowledge of asbestos hazards. In 1942, Dr.
18 Hueper published a book on occupational cancer called Occupational Tumors and Allied
19 Diseases, nearly 900 pages long. It included a lengthy section on asbestosis and cancer from
20 asbestos, in which a large number of references from the United States, Great Britain and
21 Germany were cited in support of the view that asbestos most likely did cause occupational
22 cancer. Dr. Hueper made unequivocal statements the next year in the article called: "Cancer in
23 its Relation to Occupational and Environment" published in the Bulletin of the American Society

1 for the Control of Cancer. There, Hueper said that "asbestosis cancer of the lung" as he called it
2 then, was the newest proved occupational cancer of the lung, to be listed with the ones that were
3 already known up at that time. In the Journal of the American Medical Association (JAMA),
4 there appeared an editorial called "Environmental Cancer" in 1944, in which asbestos was listed
5 among agents known and suspected of causing occupational cancer.

6 30. In 1946, Dr. Hueper also published an article in the Journal of the American Medical
7 Association (JAMA) discussing asbestos and other cancer causing substances that were used in
8 industry. In 1944 and 1949, at the invitation of the editors of JAMA, Dr. Hueper wrote
9 editorials for JAMA that discussed asbestos as a cause of lung cancer. Beginning in 1948, Dr.
10 Hueper became Chief of the Environmental Cancer Section of the National Cancer Institute
11 ("NCI"). .

12 31. Dr. Hueper's writings were widely known. For example, in an interview with
13 Newsweek Magazine in 1950, Dr. Hueper stated that the rising rates of lung cancer in urban
14 dwellers in this country could be attributable to the air pollution of industrial carcinogens such as
15 asbestos. Dr. Hueper retired in 1964. In my opinion, during his tenure at the NCI, Dr. Hueper
16 was the federal government's leading official concerned with environmental cancer. Indeed, it
17 is my opinion that he was considered by many to be the world's foremost authority on
18 environmental cancer in the 1940s, 50s, and 60s.

19 ***TEXACO AND THE API***

20 32. In the early 1940s, the American Petroleum Institute ("API"), one of the primary trade
21 organizations of the petroleum industry, established a Medical Advisory Committee ("MAC").
22 The Texas Company began sending its employees to meetings of the MAC at least as early as
23 1945. Minutes from the May, 1945 meeting of the MAC show that not only were Texas

1 Company officials on the Medical Advisory Committee, Dr. M.N. Newquist, a Texaco doctor,
2 was the chairman of the MAC's Subcommittee on Carcinogenity.

3 33. The minutes from that May, 1945 meeting indicate that a literature review was
4 contributed to the MAC from the "Library of the Technical and Research Division of the Texas
5 Company". This document was entitled "The Carcinogenicity of Bituminous Compounds" and
6 dated April 30, 1945. This literature review contained an abstract of the article published by Dr.
7 Hueper in June, 1943, "Cancer In Relation To Occupation And Environment." The abstract
8 stated that asbestos was a cause of occupational cancer.

9 34. Additionally, in July, 1945, MAC Committee members also received a literature
10 review authored by H.H. Zuidema of the Shell Oil Company that described asbestos as having
11 cancer producing ability.

12 35. API minutes continuously demonstrate that by the late 1940s and into the 1950s, there
13 were at least three Texas Company officials, Dr. Newquist, Allan E. Dooley (the same Dooley
14 that co-authored the Pennsylvania studies) as well as H.R. Warrick, regularly attending API
15 Medical Advisory Committee meetings.

16 36. It is my opinion that the API Medical Advisory Committee was aware of Dr.
17 Hueper's writings that asbestos was a cause of cancer. In 1948, members of the API's Medical
18 Advisory Committee received a memorandum that was a summary of a paper presented by Dr.
19 Hueper on occupational cancer before the American Public Health Association. The summary
20 was sent by Clyde Berry, an Industrial Hygienist for Esso-Standard Oil Company to Dr. McIver
21 Woody, Esso-Standard's Medical Director and, at that time, chairman of the API's Medical
22 Advisory Committee. Mr. Berry's summary of Dr. Hueper's presentation stated that recent
23 evidence had pointed out a definite correlation between cancer incidence and exposures to

1 substances like asbestos. It was the practice of the committee to circulate copies of
2 memorandums such as this to its members. API documents show that Allan Dooley
3 corresponded with Dr. McIver Woody, chairman of the MAC, on the day after Mr. Berry sent his
4 memorandum on Dr. Hueper to Dr. Woody.

5 37. Additionally, in the early 1950s, Dr. Hueper was invited to appear at one of the API
6 Medical Advisory Committee meetings. Then, in January 1953, another of Dr. Hueper's articles
7 entitled "Environmental Cancers: A Review", originally published in 1952 in the journal Cancer
8 Research, was reprinted and circulated to members and associates of the Medical Advisory
9 Committee. This article pointed to asbestos dust as a carcinogenic agent for the development of
10 lung cancer. It also discussed an increased incidence of lung cancer among persons with
11 asbestosis and discussed the underreporting in the medical literature of "asbestosis cancer of the
12 lung."

13 38. In 1955, another of Dr. Hueper's articles describing asbestos as an occupational
14 cancer hazard was provided to the API. This article, "Occupational Cancer Hazards" was
15 written by Dr. Hueper for a U.S. Department of Labor publication and was originally presented
16 to the National Petroleum Association in 1954. It was then circulated by a member of the API's
17 Medical Advisory Committee to other members prior to a meeting of the API's Medical
18 Advisory Committee and its Subcommittee on Carcinogenity in April 1955. API documents
19 show that Alan Dooley and Dr. Newquist were both listed as members of that subcommittee at
20 that time.

21 39. In sum, it is my opinion that the medical and scientific literature established a definite
22 connection between asbestos exposure and the development of lung cancer by the late 1940s. It
23 is my further opinion that members of the API Medical Advisory Committee during the 1940s

1 and 1950s, including Texas Company officials, were aware that asbestos was a cause of cancer
2 from the information provided to them through their activities with the API.

4 ***TEXACO AND THE INDUSTRIAL HYGIENE FOUNDATION***

5 40. The Texas Company was also a member of the Industrial Hygiene Foundation
6 ("IHF") between 1949 and 1959. This is confirmed by membership cards provided by the IHF
7 several years ago in discovery. These cards listed the dates of membership of the various
8 member companies of the IHF over the years.

9 41. First established in 1936 under the name "Air Hygiene Foundation", this organization
10 provided a means for doing confidential studies and compiling medical, legal and industrial
11 hygiene knowledge for its member companies. The IHF was founded under the auspices of the
12 Mellon Institute by a cross-section of large industrial companies. IHF would become one of the
13 principal research contractors used by the asbestos industry. Vandiver Brown, a Johns Manville
14 Company executive, initially described the IHF as "the creature of industry and the one
15 institution upon which employers can rely completely for a sympathetic appreciation of their
16 viewpoint."

17 42. The IHF conducted industrial hygiene research and medical surveys for various
18 asbestos companies and the Asbestos Textile Institute. The IHF also arranged closed informal
19 medical meetings among members in particular industries, not just the asbestos industry. There
20 were regularly published IHF medical, engineering and legal conferences. Through vehicles
21 such as confidential industrial hygiene surveys, annual conferences, and the *Industrial Hygiene*
22 *Digest*, the IHF provided a full compliment of services to member companies. IHF meetings
23

1 were covered by trade journals as well as newspapers like the *New York Times* and *Wall Street*
2 *Journal*.

3 43. The *Industrial Hygiene Digest* is a particularly important publication. This digest,
4 printed and distributed monthly to IHF member companies, contained literature abstracts from
5 all the major medical, engineering, chemical and toxicological journals of the day. Through the
6 *Digest*, member companies such as Texaco, were advised of the most important industrial
7 hygiene studies of the day including during the period 1949 to 1959. Among the many abstracts
8 of medical reports on asbestos, the *Digest* contained a case report of asbestosis in an autopsied
9 insulation worker in 1950 and an epidemiological report of asbestosis in a cohort of insulators
10 with more than 20 years in the trade, in 1957, contemporaneous to the time that Texaco was a
11 member of the IHF and was receiving the *Digest*.

12 44. Between 1949 and 1959, the *Industrial Hygiene Digest* published numerous other
13 abstracts that reporting that asbestos was injuring workers by causing asbestosis and cancer.
14 Three particular reports are illustrative:

15 45. In August 1949, the *Digest* reprinted an abstract of JAMA's editorial solely on
16 asbestosis and lung cancer unsigned but authored by Dr. Hueper. The abstract stated the
17 following: "Records of English, American and German physicians and the Annual Report of the
18 Chief Inspector of Factories in England for 1947 show that the occurrence of cancer of the lung
19 is related to pulmonary asbestosis. This relation is supported by the following observations: (1)
20 the incidence rate of cancer of the lungs in asbestosis patients is 10 to 15 times as high as among
21 the general population. (2) the male-female ratio is more nearly equal than it is for the general
22 populations, which indicates that and environmental and evidently occupational carcinogen
23

1 tended to equalize the incidence rate of cancer of the lungs for both sexes. Recent experimental
2 observations support this interpretation of the clinical evidence.”

3 46. It should also be mentioned that the original JAMA editorial from 1949 discussed the
4 dangerous propensities of asbestos for “asbestos consuming industries”. Certainly, oil refining
5 would have to be considered in that category.

6 47. In 1952, the *Digest* published an abstract of an article entitled “Asbestosis Associated
7 With Bronchiogenic Carcinoma” from the Archives of Internal Medicine. The abstract provided
8 that: “Investigators have found carcinoma in 7.5 to 14.8 percent of cases of asbestosis... the
9 opinion is suggested that “the silicate in asbestos must itself be carcinogenic. It establishes an
10 additional reason for preventive measures in the use of asbestos.”

11 48. In 1955, the *Digest* contained in abstract from the article “Mortality from Lung Cancer
12 in Asbestos Workers,” by R. Doll and published in the *British Journal of Industrial Medicine* in
13 April, 1955. This study reported that among 18 asbestos textile workers out of a cohort of 105
14 asbestos textile workers, 18 died from lung cancer. Of those 18, 15 of the workers had
15 underlying asbestosis. In an editorial published shortly after Doll’s study was published, the
16 prestigious British medical journal *the Lancet* editorialized that Doll’s study confirmed that lung
17 cancer is an occupational hazard of workers regularly working with asbestos.

18 49. IHF records also show that Dr. Newquist of Texaco became a member of the medical
19 committee of the Industrial Hygiene Foundation in 1955. Joining him as an appointee of this
20 committee in 1955, was Dr. Kenneth W. Smith, then medical director of the Johns Manville
21 Company. While his activities on the medical committee are not specifically known from the
22 documents available to date, in my opinion, Dr. Newquist’s involvement on the Medical
23 Committee demonstrates an active level of participation by Texaco in the IHF.

ASBESTOS AND MESOTHELIOMA

50. The disease mesothelioma of the pleura was attributed to exposure to asbestos or asbestosis starting in 1943 with the report of Dr. H.W. Wedler in Heidelberg. Between 1943 and 1960, there were additional reports in the German literature as well as British literature. The case reports that appeared prior to 1960 are annotated and cited by way of reference in Chapter 2, table 5 of my book. Dr. Wedler was the first to state that he believed the pleural cancers were occupational cancers, and his work was prominently cited in the United States in the 1940s. Other German pathologists starting with Leicher in 1954 would identify peritoneal mesothelioma as an asbestos disease.

51. Of special note is the study by Dr. H.B.Eisenstadt and Dr. F.W.Wilson in the *Journal-Lancet* in 1960. Dr. Wilson was a medical doctor employed by Texaco at their Port Arthur facility. The study reported on two mesothelioma cases among Port Arthur refinery workers, one of whom had asbestosis. One of the workers was a Texaco refinery employee. The report noted that, "the etiologic association of asbestos and mesothelioma has been repeatedly discussed in the literature", citing references from the US, the Netherlands, Germany, and Italy. It did note that not all investigators agreed that asbestos predisposed to the very uncommon malignancy of the pleura, but that the patient's history of asbestos exposure "alerted the suspicion of the authors in the second case."

52. A major report of pleural mesothelioma came from South Africa by Wagner and his coworkers, published in the *British Journal of Industrial Medicine* in 1960. Within a very short time it was widely accepted: that asbestos did cause mesothelioma; that levels of asbestos

1 exposure present from environmental exposure as well as occupational exposure were sufficient
2 to cause mesothelioma.

3 53. In 1964, Dr. Irving Selikoff and his coworkers published a mortality study in *JAMA*
4 showing that there was a substantial excess of occupational cancer and deaths from asbestosis
5 among people involved in the insulating trades. A group of workers who installed insulation and
6 removed it regularly was found to have 45 deaths from pulmonary cancer in a group where only
7 six or seven such deaths would have been expected. There were four deaths from peritoneal and
8 pleural mesothelioma in this cohort, and this was described as a very rare disease and a
9 substantial excess over what would have been expected. There were also 12 deaths from
10 asbestosis in this work force. The study also noted that the symptoms of these disease might not
11 become manifest until decades after the exposures.

12 54. Subsequently, later in 1964, at an international conference held in New York and
13 published in 1965, Selikoff and coworkers reported that around 80% of the people who were in
14 the insulating trade had developed asbestosis by the time they had been in trade for 20 or 30
15 years or more. At the conference in New York, British researchers Newhouse and Thompson
16 presented a report on 76 deceased mesothelioma patients and an equal number of "controls",
17 based on interviews with relatives. Their report showed strong evidence that mesothelioma
18 patients were far more likely to have had occupational, household, or neighborhood exposure to
19 asbestos than the comparison patients who died from other causes at the same hospital.

20 **CONCLUSION**

21 55. On the basis of the aforementioned facts, it is my opinion that by the late 1940s, there
22 was actual knowledge by Texaco that persons who worked with and around asbestos dust
23 generated from asbestos containing materials used in refining operations would become sick

1 with asbestos related diseases; that by 1960, Texaco was aware that asbestos was associated with
2 mesothelioma as reported by one of their own doctors in the *Lancet* . Moreover, it is also my
3 opinion that the Selikoff study in 1964, eliminated any doubt that asbestos was a cause of pleural
4 mesothelioma.
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2 I declare under penalty of perjury that the foregoing is true and correct.

3 Executed this 22nd day of October, 2003 at Garret Park, Maryland.

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6 BARRY I. CASTLEMAN, Sc.D.
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