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SUPERIOR COURT OF CALIFORNIA

COUNTY OF SAN FRANCISCO

DAVID SPRINGER and DOROTHY SPRINGER,

Plaintiffs,

vs.

ASBESTOS COMPANIES, et al.,

Defendants.

ASBESTOS
Case No.: CGC-20-276849

DECLARATION OF PLAINTIFF'S EXPERT BARRY CASTLEMAN, Sc.,D. IN OPPOSITION TO DEFENDANT KERR CORPORATION'S MOTION FOR SUMMARY ADJUDICATION

Date: April 14, 2021
Time: 9:30
Dept: 503

Complaint Filed: July 13, 2020
Trial Date: May 3, 2021

I, BARRY CASTLEMAN, DECLARE AND STATE AS FOLLOWS:

BARCKGROUND AND QUALIFICATIONS

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

2. My professional experience goes back almost 50 years in the area of asbestos and other occupational and environmental health problems. My field is occupational and environmental health policy, which is a branch of Public Health, mainly oriented towards the recognition of risk factors and the prevention of disease from industrial activities.

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

4. My Doctoral thesis was, Asbestos: An Historical Case Study of Corporate Response to an Industrial Health Hazard and is largely identical to a book published in 1984 by Prentice Hall Law and Business called Asbestos: Medical and Legal Aspects (now in its 5th Edition, 2005). The doctoral thesis is an historical review of the asbestos problem as a public health problem in society worldwide, but mainly in the United States. It encompasses a comprehensive review of medical literature of all kinds, as well as other literature available in libraries and published sources such as government publications, safety magazines, engineering

journals, trade magazines, insurance publications, encyclopedias, popular magazines, and newspapers. The doctoral thesis also involved research based on unpublished government records. The government records included workers' compensation claims files where claims had been made by individuals alleging that they had asbestos-related diseases of the lungs, claims against various companies that were their employers, some of which companies were also manufacturers of asbestos insulation products these individuals have used in the course of their work.

5. In addition to published information of all kinds, I examined files, unpublished information available from the U.S. government archives, the archives of scientists and the archives of institutions that had worked for and with asbestos companies. I also looked at unpublished information which was obtained in legal discovery. This included trade association minutes, corporate documents, and testimony of corporate officials who were associated with asbestos hazards over the years -- doctors, plant managers, executives, and other people who were aware of events that transpired.

6. In addition to published information and corporate knowledge that came out of mainly legal discovery, I have also interviewed a many influential people in the field of industrial medicine and hygiene. This includes pathologists Harold Stewart, who first published on asbestosis in 1931, and Alfred Angrist, who first published on asbestos and lung cancer in 1942. Another, Dr. Wilhelm Hueper, was a leading United States authority in the field of occupational cancer and first director of the environmental cancer section of the National Cancer Institute. It also includes Dr. Irving J. Selikoff who was a pulmonologist who was instrumental in researching asbestos hazards and informing workers about those hazards. I also interviewed Dr. Harriet Hardy, Dr. Thomas Mancuso, Dr. Gerrit Schepers, Dr. Richard Doll and Dr. Morris Greenberg, among many others, who made important contributions to the development of knowledge about the hazards of asbestos.

7. I have acted as consultant for The National Science Foundation, the European Commission, the Environmental Defense Fund, and the Natural Resources Defense Council. I have provided testimony to United States congressional committees concerning the hazards of asbestos and other toxic substances. I have also testified before United States congressional committees regarding the development of asbestos knowledge. I have been a paid consultant to the Office of Toxic Substances of the United States Environmental Protection Agency and have performed research on environmental asbestos hazards. I have performed consulting work for the United States Occupational Safety and Health Administration. In my research, I have reviewed thousands of publications and documents pertaining to asbestos-related disease and have interpreted and related the contents of the same. I have published approximately 70 articles as an author or coauthor in medical and scientific journals related to exposure to asbestos and other toxic substances. I have also spoken at conferences worldwide about asbestos hazards.

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

THE BODY OF KNOWLEDGE ABOUT ASBESTOS DISEASES

ASBESTOSIS

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

10. The medical literature of asbestos disease mainly developed after the publication of a case report in the British Medical Journal by Dr. Cooke, a pathologist in Britain in 1924. This was called, "Fibrosis of the Lungs Due to the Inhalation of Asbestos Dust." Dr. Cooke

reported on the death of a 33-year-old woman who had worked off and on in asbestos plants from the age of 13. According to Cooke, the scarring of her lung tissues was largely attributable to the inhalation of asbestos in the course of her work. There followed a number of other reports in British sources, and this is reflected as well in the United States in editorials of the Journal of the American Medical Association, In one on January 14, 1928, called "Pulmonary Asbestosis," reference is made to Cooke's case and other reports on the disease now called asbestosis. The Journal of the American Medical Association recommended that further attention be paid to this disease, as it may well be occurring in the United States. The Journal of the American Medical Association issued another editorial in 1930 about asbestosis, this time noting the asbestosis had become a compensable occupational disease in Great Britain under the workers' compensation law. The Journal of the American Medical Association was believed to have been read by 80 percent of American physicians in those years, medical historians have written. Additionally, there were additional reports of asbestosis published in the British Medical Journal, which is in every medical library I have ever walked into. The reports mainly involved deaths of individuals who were verified as having asbestosis by autopsy.

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

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

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

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

14. Literature on asbestosis was substantially developed by 1935. The disease was shown to have a distinctive pathological appearance with asbestos bodies, types of scarring that would form around the asbestos fibers trapped in the lung tissues. This was commented upon a

great deal by pathologists in the 1920s. The disease was shown to have an identifiable radiological appearance on chest X-ray distinctly different from such diseases as TB and silicosis. The disease was also characterized by shortness of breath, which would become more pronounced as the individual became more seriously affected by the disease.

ASBESTOS AND LUNG CANCER

15. In 1935, another aspect of the hazard of asbestosis was identified with the publication of medical case reports of asbestosis in combination with lung cancer. The first such reports were published by Lynch and Smith in the United States in 1935 in the American Journal of Cancer and by Dr. Gloyne in Great Britain in Tubercle in two separate reports in 1935 and 1936.

16. In these reports, the question was raised that chronic irritation of the lung tissues from asbestos might be producing cancer as well as lung scarring already well identified as an asbestos-related phenomenon.

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

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

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

20. Dr. Wilhelm Hueper is an important figure in the history of the knowledge of occupational cancer and in the development of the knowledge of asbestos hazards. In 1942, Dr. Hueper published a book on occupational cancer called Occupational Tumors and Allied Diseases, nearly 900 pages long. It included a lengthy section on asbestosis and cancer from asbestos, in which a large number of references from the United States, Great Britain and Germany were cited in support of the view that asbestos most likely did cause occupational cancer. Dr. Hueper made unequivocal statements the next year in the article called: "Cancer in its Relation to Occupational and Environment" published in the Bulletin of the American Society for the Control of Cancer. There, Hueper said that "asbestosis cancer of the lung" as he called it then, was the newest proved occupational cancer of the lung, to be listed with the ones that were already known at that time. In the Journal of the American Medical Association (JAMA), there appeared an editorial called "Environmental Cancer" in 1944, in which asbestos was listed among agents known and suspected of causing occupational cancer.

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

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

23. In my opinion, during his tenure at the NCI, Dr. Hueper was the federal government's leading official concerned with environmental cancer. Indeed, it is my opinion that he was considered by many to be the world's foremost authority on environmental cancer in the 1940s, 50s, and 60s.

ASBESTOS AND MESOTHELIOMA

24. 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.

25. 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. 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."

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

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

28. Subsequently, later in 1964, at an international conference held in New York and published in 1965, Selikoff and coworkers reported that around 80 percent of the people who were in the insulating trade had developed asbestosis by the time they had been in trade for 20 or 30 years or more. At the conference in New York, British researchers Newhouse and Thompson presented a report on 76 deceased mesothelioma patients and an equal number of "controls," based on interviews with relatives. Their report showed strong evidence that mesothelioma patients were far more likely to have had occupational, household, or neighborhood exposure to

asbestos than the comparison patients who died from other causes at the same hospital. Dr. Selikoff's findings were widely reported in the newspapers throughout the country in the 1960's.

KNOWLEDGE OF ASESTOS HAZARDS IN THE DENTAL INDUSTRY

29. As set forth above, there was ample general scientific and medical literature and and it was well known during the 1960's that asbestos could cause diseases including asbestosis, lung cancer, and mesothelioma. In 1960, it was unequivocally established in the asbestos caused mesothelioma. (Wagner, "Diffuse Pleural Mesothelioma and Asbestos Exposure in The North Western Cape Province", *Brit. J. industr.Med.,* 1960, 17:260-271). The Mt. Sinai studies by Professor Irving Selikoff and scientists from around the world established at a 3-day conference in New York in 1964 established that persons diagnosed with mesothelioma had occupational, household, and/or neighborhood exposure to asbestos. (Castleman: *Asbestos* (5th).)

30. As a medical profession, in addition to the general knowledge of asbestos hazards available to the dental industry, the hazards of asbestos specific to dental products was reported as early as 1967.

31. In 1967, a peer reviewed article published in 1967 in the British Dental Journal was titled "The Possible Adverse Effects of Asbestos in Gingivectomy Packs." This article discussed the potential hazards of asbestos in dental products and specifically mentioned asbestosis, lung cancer and mesothelioma as risks of exposure to asbestos. The publication recommended that this particular dental product, asbestos gingivectomy packs, be discontinued because of the hazards posed to dentists working with them.

32. In April of 1976, the Journal of the American Dental Association published an article titled "Hazards of Asbestos in Dentistry" and a letter presenting added details. The article discussed the known hazards of asbestos, which include the relationship between "asbestos exposure and the development of pulmonary asbestosis and fibrosis, lung cancer, and pleural and peritoneal mesotheliomas." It describes the particular hazard from work with "asbestos used to line casting rings or crucibles for casting machines and in general is kept in the laboratory in

large rolls. Here, the danger lies in the tendency for personnel to carelessly cut sections off these rolls and thus release asbestos into the ambient air."

33. Experts at the National Institute for Occupational Safety and Health replied to the JADA article on asbestos urging that the ADA councils on dental practice "take more aggressive steps to educate the dental profession" about the carcinogenicity of asbestos. They concluded, "Leadership and appropriate measures should be taken to assure that dental students, instructors, and patients are not likewise at increased health risk resulting from dental laboratory or clinical exposure to asbestos." (P Infante and R Lemen. Asbestos in Dentistry. JADA 93: 221-222, Aug. 1976).

34. In 1981, an article was published containing measurements of air concentrations of asbestos in dental workplaces (D Brune and H Beltesbrekke. Levels of Methyl Methacrylate, formaldehyde, and asbestos in dental workroom air. Scandinavian Journal of Dental Research 89:113-116, 1981). "Fig. 4 presents the number of asbestos fibers in breathing air released during dismantling molds. In two experiments values of 21 and 27 f/cc were measured during the dismantling procedure." It was noted that the dismantling procedure may account for 5 minutes, whereupon exposures would decline to less than 2 f/cc in 10 more minutes. This shows that worker exposures could exceed the ceiling limit in the 1972 OSHA asbestos standard of 10 f/cc for 15 minutes (150 f-min/cc) -- from 5 minutes at 25 f/cc (125 f-min/cc) and then 10 more minutes averaging 2.5 f/cc (25 f-min/cc).

ASBESTOS KNOWLEDGE THROUOGH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

35. Congress established the Occupational Safety and Health Administration ("OSHA") under the Occupational Safety and Health Act which was signed into law by President Richard M. Nixon on December 29, 1970. The passage of this act was reported in the news media. OSHA's emergency temporary standard for asbestos in 1971 and its asbestos standard in 1972 were both published in the Federal Register. The 1972 OSHA rule included a

preamble discussing the hazards of asbestos which include its ability to cause asbestosis, lung cancer and mesothelioma. It informed employers that the lives of their employees are at risk. The OSHA asbestos regulations required employers to control asbestos exposures to their employees through warnings, industrial hygiene controls like ventilation, local exhaust and wet down methods, prohibiting practices known to cause asbestos exposures like the dry sweeping of dust that includes asbestos, and the use of respiratory protection.

KERR CORPORATION'S KNOWLEDGE OF ASBESTOS HAZARDS

36. I have reviewed pertinent portions deposition testimony of Kerr Corporation's Lawrence Girling who testified in this matter on January 29, 2021. Mr. Girling started at Kerr Corporation in 1967, retired as Vice President of Manufacturing in 2003, was involve in the purchase of strip asbestos sold by Kerr Corporation, and was also involved in Kerr's efforts to discontinue the use of strip asbestos. Kerr Corporation admits it sold strip asbestos used to line casting rings or crucibles from 1959 until at least 1979. Kerr Corporation received the April 1976 Journal of the American Dental Association article titled "Hazards of Asbestos in Dentistry." Mr. Girling testified that the article was presented at a management meeting he attended at Kerr Corporation in 1976.

37. As a major supplier of dental products and equipment, Kerr would have been aware of publications in dental journals concerning asbestos hazards. The first such article was published in 1967 in the British Dental Journal titled "The Possible Adverse Effects of Asbestos in Gingivectomy Packs." This article discussed the potential hazards of asbestos in dental products and specifically mentioned asbestosis, lung cancer and mesothelioma as risks of exposure to asbestos. The publication recommended that this particular dental product, asbestos gingivectomy packs, be discontinued because of the hazards posed to dentists working with them.

38. In 1976, the Journal of the American Dental Association published an article titled "Hazards of Asbestos in Dentistry" that specifically mentioned the hazards of asbestos

casting ring tape, a product sold by Kerr.

39. Kerr and its officers and directors were certainly aware of this publication as the company advertised its products in it during the 1960's and 1970's.

40. Kerr did not provide warnings or recall its asbestos containing products.

41. Regulations like the OSHA asbestos standard are published in the Federal Register to provide notice to employers like Kerr who are impacted by the regulation. As an employer whose business included the sale of asbestos products, OSHA's asbestos regulations applied to Kerr. The OSHA's emergency asbestos standard published in 1971 and asbestos standard published in 1972 also put Kerr on notice of the hazards of asbestos. Mr. Lawrence Girling, who started at Kerr Corporation in 1967 and retired as Vice President of Manufacturing, testified that Ken Kovac, Vice President of Quality Assurance at Kerr Corporation, monitored the Federal Register in the 1970's. Mr. Girling confirmed that Kerr Corporation was familiar with OSHA, knew that "OSHA came out in 1972" and that Kerr worked with OSHA.

42. Thus, based on the above, I can opine that Kerr Corporation by and through its officers and directors had actual knowledge of the hazards of asbestos, as early as 1972 and more likely than not had knowledge of the hazards of asbestos as early as 1967.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed this _____ day of April 2021, in Garrett Park, Maryland.

_____

BARRY I. CASTLEMAN, Sc.D.