

CAUSE NO. 99-08033-B

MALCOLM LEE MURPHY, JR. AND §
ANNETTE HARBERT MURPHY; §

IN THE COUNTY COURT

Plaintiffs, §

V. §

AT LAW #2

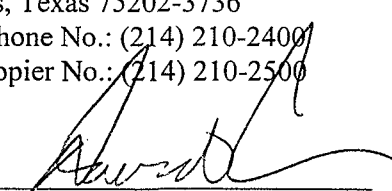
OWENS CORNING (a/k/a OWENS §
CORNING CORP), et al.; §

Defendants, §

DALLAS COUNTY, TEXAS

**DEFENDANT ELLIOTT TURBOMACHINERY'S FIRST SUPPLEMENTAL
RESPONSE TO PLAINTIFF'S REQUESTS FOR DISCLOSURE**TO: Plaintiffs by and through their counsel, D. Leanne Jackson, Esq., Baron & Budd, P.C.,
The Centrum, Suite 1100, 3102 Oak Lawn Ave., Dallas, Texas 75219.COMES NOW, ELLIOTT TURBOMACHINERY, a defendant in the above-styled and
numbered cause ("Elliott" or "Defendant") and makes and files this, its First Supplemental Response
to Plaintiff's Requests for Disclosure.

Respectfully Submitted,

DEHAY & ELLISTON, L.L.P.
901 Main Street
3500 Bank of America Plaza
Dallas, Texas 75202-3736
Telephone No.: (214) 210-2400
Telecopier No.: (214) 210-2500By: DAVID W. CROWE
State Bar No. 05164250
JOHN W. ARNOLD
State Bar No. 00795231**ATTORNEYS FOR DEFENDANT
ELLIOTT TURBOMACHINERY**

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the above and foregoing **Defendant Elliot Turbomachinery's First Supplemental Responses to Plaintiffs' Requests for Disclosure** has been forwarded to counsel of record for Plaintiff by hand delivery and to all other known counsel of record by U.S. Mail, postage prepaid, on this the 23 day of March, 2001.



David W. Crowe

First Supplemental Response

194.2(f): for any testifying expert:

- 1) the expert's name, address and telephone number;

Supplemental Response: Please see Exhibit "A" attached hereto.

- 2) the subject matter on which the expert will testify;

Supplemental Response: Please see Exhibit "A" attached hereto.

- 3) the general substance of the expert's mental impressions and opinions and a brief summary of the basis for them, of if the expert is not retained by, employed by, or otherwise subject to the control of the responding party, documents reflecting such information;

Supplemental Response: Please see Exhibit "A" attached hereto. Also please see Exhibit "B" attached hereto.

- 4) if the expert is retained by, employed by, or otherwise subject to the control of the responding party:

- A) all documents, tangible things, reports, models, or data compilations that have been provided to, reviewed by, or prepared by or for the expert in anticipation of the expert's testimony; and

Supplemental Response: All information reviewed by Elliott's experts is in Plaintiff's possession, either because it was produced by Plaintiffs in response to master discovery requirements, because it was produced by Elliott in response to master discovery requirements, or because it was generated in connection with depositions that have occurred in the case. For additional descriptions of the materials reviewed by Elliott's experts, please see Exhibit "B".

- B) the expert's current resume and bibliography.

Supplemental Response: Please see Exhibit "C" attached hereto.

Exhibit “A”

**ELLIOTT TURBO MACHINERY COMPANY'S (ETMC'S) LIST OF MEDICAL,
STATE-OF-THE-ART, ECONOMIC, LIABILITY AND DAMAGE EXPERTS**

1. Dr. Elvin Adams, (by deposition), General Conference of SDA's, 6840 Eastern Avenue, N.W., Washington, D.C. 20012. Testimony will be by deposition given in: "Robert Solomon v. Armstrong, Inc.", No. TY-84-39-CA, in the U.S. District Court for the Eastern District of Texas, Tyler Division.

Dr. Adams will testify on asbestos-related diseases' effects, and in particular on the effects of smoking cigarettes.

2. Dr. Oscar Auerbach, deceased, 158 Long Hill Drive, Short Hills, New Jersey 07078, (201) 675-6988.

Dr. Auerbach will testify by deposition regarding the pathology of the Plaintiff and/or Plaintiff's decedent. Dr. Auerbach will also testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology. Medical testimony as to medical condition of specific plaintiffs as identified during ongoing discovery.

3. Dr. Howard E. Ayer, Department of Environmental Health, College of Medicine, Kettering Laboratory (056), University of Cincinnati, Cincinnati, OH 45267, (513) 558-5710.

Dr. Ayer will testify on industrial hygiene and threshold limit values, product testing, emissions, development of knowledge regarding asbestos exposure, product warnings, dust counting equipment and techniques, and/or documentary testimony relevant to the defense of plaintiff(s) claims.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

4. Dr. Stephen Ayres, live or by deposition, Department of Internal Medicine, 1325 South Grand Avenue, St. Louis, MO 63104. If by deposition, testimony will be by deposition given in: "In re: Asbestos Personal Injury Cases" in the following courts: Circuit Court of Baltimore City, Maryland; Circuit Court for Washington County, Maryland; Circuit Court for Prince Georges County, Maryland; Circuit Court for Cecil County, Maryland; Circuit Court for St. Mary's County, Maryland; Superior Court of Washington; District of Columbia, Civil Division; Circuit Court of Alleghany County, Maryland; United States

District Court for the District of Columbia; United States District Court of Maryland; and Circuit Court for Baltimore County, Maryland BCA 1 through 4, taken on August 10 through August 12, 1989 in Baltimore, Maryland.

Dr. Ayres will testify on historical review and state of the art of pulmonary medicine and asbestos-related conditions. Dr. Ayres will testify as to the Saranac papers and that the Defendants could not have known end users were at risk until approximately the late 1960's or early 1970's.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

5. Dr. Peter Barrett, Chief of Radiology, Quincy City Hospital, Quincy, MA 02169

Dr. Barrett may testify about the plaintiff's medical condition, the presence or absence of asbestos related disease and about the historical "state-of-the-art," he will also testify development of medical knowledge about asbestos, and presence or absence of medical consequences relating to low dose exposure to asbestos emanating from asbestos-containing products. Dr. Barrett may testify specifically about diseases, such as chronic obstructive pulmonary disease, even though in some cases he may not have seen plaintiffs, or reviewed medical records of the plaintiffs. Dr. Barrett may testify in the area of general medicine as it relates to the development of an asbestos-related disease.

6. Dr. Joseph H. Bates, 4300 West 7th Street, Little Rock, Arkansas 72205, (501) 660-2029.

Dr. Bates will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos. Dr. Bates will also testify concerning those areas described for witnesses Demopoulos, Hinshaw, Weill, Craighead, Gaensler and Kerby.

Dr. Bates will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and

life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

7. Dr. Brian Bradley, The Lung Center, 403 Woodlawn, Pasadena, TX 77504, (713) 941-0088.

Dr. Bradley is a specialist in the area of respiratory diseases. Dr. Bradley will testify as to all matters pertaining to his examination of the plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Bradley will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Bradley will also testify concerning those areas described for witnesses Demopoulos, Hinshaw, Weill, Craighead, Gaenster and Kerby. Dr. Bradley may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

Dr. Bradley will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaque and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

8. Dr. Kevin Browne, 66a Warwick Way, London, England SW1V 1RZ.

Dr. Brown will testify concerning various cancer issues, including risk of cancer, relationship between asbestosis and lung cancer, carcinogenicity of worksite and

environmental chemicals and substances, epidemiology. General and asbestos-related pulmonary medicine issues and epidemiology relevant thereto.

Dr. Brown will testify regarding the historical review and state of the art of pulmonary medicine and asbestos-related conditions and will further testify to the effect that Defendant could not have known end users were at risk until approximately the late 1960's or early 1970's.

9. Louis Burgher, M.D., Ph.D., 145 North Tower Doctors Building, 4242 Farnam Street, Omaha, NE 68131, (402) 559-2900.

Dr. Burgher will testify regarding the development of medical and scientific knowledge with respect to asbestos-related diseases in general, and with respect to the medical condition of plaintiffs. Epidemiology and general medicine regarding asbestos exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

10. Dr. Sam H. Cade, Jr., Radiology Department, Baylor University Medical Center, 3500 Gaston Avenue, Dallas, Texas 75242, (214) 820-8228.

Dr. Cade is a B reader and will testify regarding the radiographs and CT Scans of the Plaintiff and/or Plaintiff's decedent.

11. Dr. Philip Cagle, Pathologist, 1200 Moursund, Room 286A, Baylor College of Medicine, One Baylor Plaza, Houston, Texas 77030, (713) 798-3671.

Dr. Cagle is a pulmonary pathologist. Based on his review of medical records, including pathology materials, he will testify about the plaintiff's(s') medical condition, and the cause of plaintiff's(s') medical condition. His testimony will also include a discussion of asbestos and its effect on human health generally and plaintiff's(s') specifically, and the effect that other substances have on human health generally and plaintiff's(s') condition specifically. Dr. Cagle is a pathologist who will testify about asbestos related diseases, causes of cancer, and the effect of other substances, such as cigarette smoke, on the plaintiff. Dr. Cagle may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

12. Gregorio I. Casar, M.D., Respiratory Consultants of Houston, Smith Tower, 6550 Fannin, Ste. 2403, Houston, TX 77030, (713) 790-6250.

Dr. Casar is a specialist in the area of respiratory diseases. Dr. Casar will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Casar will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Casar will also testify concerning those areas described for witnesses Demopoulos, Hinshaw, Weill, Craighead, Gaensler and Kerby. Dr. Casar may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

Dr. Casar will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

13. Dr. Bruce Case
Department of Pathology
McGill University
3775, University Street
Montreal, Quebec H3A 2B4
Canada

It is impossible to set forth in precise detail the exact topics and content of the testimony of Dr. Case. Dr. Case has researched asbestos and asbestos medicine for many years. He has opinions about his research, his studies, the development of knowledge about asbestos, and about the relationship of asbestos to disease. Dr. Case has specific opinions about the development of the disease, mesothelioma, and its relationship to crocidolite, amosite, and chrysotile. He will offer opinions about his research into chrysotile and where and how it

might be implicated in the development of asbestosis, mesothelioma, and any lung cancer. Dr. Case is expected to testify about the epidemiology of asbestos related diseases and the incidence of disease in both men and women.

Dr. Case is a pathologist and epidemiologist at the McGill University. He will testify generally about the evolution of asbestos disease; the pathology of asbestos-related diseases including those named as "Non-Routine"; the "state-of-the-art" of asbestos-related diseases; and, will testify about other areas of pulmonary pathology including, but not limited to, emphysema, carcinomas, and related matters.

Dr. Case may testify regarding the diagnosis and cause of plaintiffs' condition. He will discuss the differing physical, chemical and biological properties of various types of asbestos fibers, and will explain to the jury that chrysotile fibers are incapable of causing, or unlikely to have caused, plaintiffs' alleged condition. Dr. Case is expected to provide testimony in the following areas:

1. anatomy and function of the respiratory and circulatory systems and the diagnosis and treatment of disease affecting such systems;
2. the nature of asbestos and asbestosis;
3. the symptomatology, disease process and diagnosis of asbestosis and cancer associated with the respiratory system, peritoneum and peritoneal cavity;
4. the nature and extent of medical and scientific knowledge regarding any association of obstructive pulmonary disease with asbestos fiber exposure;
5. the effect of exposure to substances other than asbestos on the development and manifestation of obstructive and restrictive conditions and diseases of the respiratory system and other causes of obstructive and restrictive disease or defects of the respiratory system;
6. methods of diagnosis of various diseases, particularly means of establishing the differential diagnosis of alleged asbestos-related diseases with other non-asbestos-related diseases;
7. incidence of lung cancer among individuals with asbestosis or asbestos exposure without asbestosis, compared with non-asbestotic asbestos workers, non-asbestos exposed workers, and with the general population;

8. the import of any exhibit (including without limitation, corporate documents of defendants) introduced as evidence, or any items prepared for use or used for demonstrative purposes by any witness;
9. cigarette smoking and its effect on the lung and other organs;
10. the relative danger of these defendants' asbestos-containing products;
11. the relationship of cigarette smoking to cancer of the lung and cancers of other sites with reference to epidemiological studies and physiologic effect;
12. difference between impairment and disability;
13. effect of asbestosis, or asbestos exposure without asbestos, on disability and life expectancy; effect of pleural plaques or other pleural manifestations of asbestos exposure on lung function or life expectancy.

Dr. Case is expected to testify about chrysotile asbestos, amosite asbestos, and fiber burden studies. Dr. Case is expected to testify that there is difference between the various asbestos fibers and their individual ability to produce or contribute to specific asbestos related disease. He is expected to testify about this difference in this fiber potential. Dr. Case is also expected to testify about the dose responses relationship for asbestosis, lung cancer, and mesothelioma. Dr. Case will testify about threshold levels for various diseases. Dr. Case may be provided with specific fiber burden studies and asked for his opinions about those fiber burden studies. Dr. Case may be provided retrospective exposure assessment evaluations by one or more individuals and asked to comment on those exposure findings as they relate to causation or substantial factors of causation.

14. Andrew Churg, The University of British Columbia, 2211 Wesbrook Mall, Vancouver, B. C. Canada V6T1W5.

Dr. Churg will testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology. Dr. Churg may also testify regarding his review of the pathology of the Plaintiff(s) and/or Plaintiffs' decedent.

15. Dr. Thomas V. Colby, Department of Laboratory Medicine and Pathology, Mayo Clinic, 13400 E. Shea Blvd., Scottsdale, AZ. 85259 (602) 301-7099.

Dr. Colby will testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of

worksite and environmental chemicals and substances, epidemiology. Medical testimony as to medical condition of specific plaintiffs as identified during ongoing discovery.

16. Dr. Bobby F. Craft, Industrial Health, Inc., 640 East Wilmington Avenue, Salt Lake City, Utah 84106.

Dr. Craft will testify that the medical community could not become aware that insulators with prolonged intense exposure might be at risk for asbestos related diseases until the late 1960's or early 1970's.

17. Dr. John E. Craighead, Chairman, Department of Pathology, A249 Given Medical Building, University of Vermont College of Medicine, Burlington, Vermont 05401, (802) 425-3480.

Dr. Craighead will testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto. Cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology. Medical testimony as to medical condition of specific plaintiffs as identified during ongoing discovery.

Dr. Craighead will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community's awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

18. Dr. James Crapo, 4650 South 4th Street, Englewood, CO 80110 (303) 221 - 6695.

Dr. Crapo will testify concerning the state of the scientific and medical art in the history and knowledge of asbestos-related diseases and asbestos-related diseases in general, and the medical condition of plaintiffs. Epidemiology and general medicine regarding asbestos exposure, including but not limited to the potency of various types of asbestos.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

19. Dr. Johanna Davies, 5 Pine Street, Albany, NY, (518) 262-5345.

Dr. Davies will testify regarding the development of medical and scientific knowledge with respect to asbestos-related diseases in general, and with respect to the medical condition of plaintiffs.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

20. Dr. George Delclos, Pulmonary Section F907, Methodist Hospital, 6550 Fannin, Suite 2403, Houston, Texas 77030, (713) 790-6250.

Dr. Delclos is a specialist in the area of respiratory diseases. Dr. Delclos will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Delclos will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Delclos will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Delclos will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and

life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

21. Dr. Harry B. Demopoulos, Pathologist, Health Maintenance Programs, Inc., P.O. Box 252, Valhalla, New York 10595, (914) 592-3155.

Dr. Demopoulos will testify regarding historical review and state of the art of asbestos-related conditions, general and asbestos-related pulmonary pathology and epidemiology relevant thereto, various cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology.

Dr. Demopoulos will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community's awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, the witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

It is also expected that Dr. Demopoulos will testify that the medical community became aware that insulators with prolonged intense exposure might be at risk for asbestos related diseases in the late 1960's or early 1970's. Dr. Demopoulos will not testify concerning the diagnosis or physical condition of these particular Plaintiffs.

22. Dr. Scott R. Donaldson, North Texas Pulmonary Associates, 375 Municipal Drive, Suite 140, Richardson, Texas 75080, (214) 680-0666.

Dr. Donaldson is a specialist in the area of respiratory diseases. Dr. Donaldson will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Donaldson will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Donaldson will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Donaldson will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

23. William Dyson, Ph.D., Workplace Hygiene, L.L.C., 6518 Airport Parkway, Suite 203, Greensboro, NC 27409, Tel: (336) 297-1642, Fax: (336) 297-1643.

Dr. Dyson will testify regarding state of the scientific and medical art in the history and knowledge of asbestos-related diseases and asbestos-related diseases in general, and the medical condition of plaintiffs. Epidemiology and general medicine regarding asbestos exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

24. William Lee Eschenbacher, M.D., F988, Pulmonary Function Laboratory, The Methodist Hospital, 6565 Fannin Street, Houston, Texas 77030, (713) 790-2076.

Dr. Eschenbacher is a specialist in the area of respiratory diseases. Dr. Eschenbacher will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the bases of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Eschenbacher will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Eschenbacher will also testify concerning those areas described for witnesses Demopoulos, Hinshaw, Weill, Craighead, Gaensler and Kerby. Dr. Eschenbacher may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

Dr. Eschenbacher will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

25. Dr. I. A. Feingold, M.D.F.R.C.P., South Miami Hospital, 6200 Southwest 73rd Street, Miami, Florida 33143, (305) 668-5229

Dr. Feingold is the Chief of the Division of Pulmonary Medicine at South Miami Hospital. He will testify as a state-of-the-art witness generally and with respect to asbestos-containing products. He may also testify concerning the physiological and radiological aspects of asbestos-related lung disease, including etiology, diagnosis, treatment, prognosis and epidemiology; the causes of lung cancer, the history of the medical science concerning our knowledge and understanding of asbestos and asbestos-related disease; fiber types,

dose/response and threshold levels needed to produce disease, the relationship of asbestos exposure to other environmental factors and their comparative risks. Dr. Feingold who also testify that work with some asbestos-containing products does not result in dangerous asbestos fibers exposure that any asbestos exposure from these products played no role in the genesis of plaintiffs' lung disease, if any.

In addition, Dr. Feingold is expected to testify about the various fiber release studies, performed at industrial hygiene laboratories, on the use of asbestos containing products.

Dr. Feingold may testify, in general concerning asbestos related diseases and the effects of exposure to sbestos upon persons in occupational settings, including the epidemiology of asbestos related diseases and the criteria for diagnosis of an asbestos related disease. He may also testify regarding the existence or non-existence of any asbestos related disease in the plaintiffs, including, but not limited to pleural changes, asbestosis, lung cancer, mesothelioma, laryngeal cancer, esophageal cancer and stomach cancer. He may also testify on whether any asbestos related disease allegedly suffered by plaintiffs was medically or proximately called by exposure to asbestos containing gasket and packing products. He may also testify on a dose response relationship between exposure to asbestos and asbestos related disease. He may also testify on increased risk of cancer issues and whether a particular plaintiff has a reasonable fear of cancer due to exposure to asbestos. He may also testify on the health consequences of smoking.

26. Dr. Gregory Foster, North Texas Pulmonary Associates, 375 Municipal Drive, Suite 140, Richardson, Texas 75080, (214) 680-0666.

Dr. Foster is a specialist in the area of respiratory diseases. Dr. Foster will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Foster will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Foster will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Foster will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with

asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

27. Dr. Edward A. Gaensler, 63 Eucalyptus Knoll, Mill Valley, CA 94941 (415) 381-5863.

Dr. Gaensler will testify regarding historical review and state of the art of pulmonary medicine and asbestos-related conditions, general and asbestos-related pulmonary pathology and epidemiology relevant thereto, various cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology, cancer causation and lack of association of various types and forms of cancer with asbestos.

Dr. Gaensler will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, the witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

It is also expected that Dr. Gaensler will testify that the medical community could not become aware that insulators with prolonged intense exposure might be at risk for asbestos

related diseases until the late 1960's or early 1970's. Dr. Gaensler will not testify concerning the diagnosis or physical condition of these particular Plaintiffs.

28. Michael A. Graham, M.D., Division of Forensic and Environmental Pathology, St. Louis University School of Medicine, 1402 Grand Avenue Boulevard, St. Louis, MO 63104, (314) 577-8298

Dr. Graham is a pulmonary pathologist. Based on his review of medical records, including pathology materials, he will testify about the plaintiff's(s') medical condition, and the cause of plaintiff's(s') medical condition. His testimony will also include a discussion of asbestos and its effects on human health generally and plaintiff's(s') specifically, and the effect that other substances have on human health generally and plaintiff's(s') condition specifically. Dr. Graham is a pathologist who will testify about asbestos related diseases, causes of cancer, and the effect of other substances, such as cigarette smoke, on the plaintiff. Dr. Graham may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

29. Dr. Donald Greenberg, The Methodist Hospital, Department of Pathology, 6565 Fanning, 2nd Floor, Houston, Texas 77030, (713) 723-9041. By deposition given in the case of Spruit v. The Celotex Corporation, et al, CA3-85-1979-D, U.S. District Court for the Northern District of Texas, Dallas Division.

Dr. Greenberg will also testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology. Medical testimony as to medical condition of specific plaintiffs as identified during ongoing discovery.

30. Kathryn A. Hale, M.D., Assistant Professor of Medicine, Baylor College of Medicine and The Methodist Hospital, 6550 Fannin, Smith Tower #1236, Houston, TX 77030, (713) 790-2076.

Dr. Hale is a specialist in the area of respiratory diseases. Dr. Hale will testify as to all matters pertaining to her examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; her opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; her prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Hale will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect

to plaintiff specifically. Dr. Hale will also testify concerning those areas described for witnesses Demopoulos, Hinshaw, Weill, Craighead, Gaensler and Kerby. Dr. Hale may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

Dr. Hale will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

31. Dr. Peter Heidbrink, Board Certified Pulmonary Specialist at Southwest Pulmonary Associates, St. Paul Professional Building #2, 5959 Harry Hines Boulevard, Suite 711, Dallas, Texas 75235, (214) 879-6555.

Dr. Heidbrink is a specialist in the area of respiratory diseases. Dr. Heidbrink will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Heidbrink will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Heidbrink will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Heidbrink will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the

development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

32. Dr. Elliott Hinkes, Board Certified Oncologist and Hematologist at 301 North Prairie Avenue, Suite 311, Inglewood, California 90301, (213) 674-0050.

Dr. Hinkes will testify regarding various cancer issues including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology, cancer causation and lack of association of various types and forms of cancer with asbestos. Dr. Hinkes will testify concerning the relationship of asbestos and smoking to the development of cancer. Dr. Hinkes will also testify concerning the incidence of lung cancer among individuals with asbestosis or exposure to asbestos-containing products.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

33. Dr. H. Corwin Hinshaw (by deposition), retired Emeritus Professor of Medicine at the University of California School of Medicine, P.O. Box 546, Belvedere, California 94920, (415) 435-9512. Testimony will be by deposition given in "In Re: Related Asbestos Cases", No. C-83-6251-RFP, in the United States District Court for the Northern District of California; "In Re" Related Shipyard and Applicator Cases: Alameda County Asbestos Litigation", in the Superior Court of the State of California, in and for the County of Alameda; Misc. No. 959, "In Re: Shipyard and Applicator Cases" (Clapper & Brayton) Consolidated for Discovery, in the Superior Court of the State of California, in and for the County of Solano; and "In Re" San Francisco Asbestos Complex Litigation", in the Superior Court of the State of California, in and for the City and County of San Francisco. "Jimmie L. Vaughan v. Johns-Manville, et al", No. CA3-81-0070-F.

Dr. Hinshaw will testify regarding historical review and state of the art of pulmonary medicine and asbestos-related conditions, general and asbestos-related pulmonary medicine and epidemiology relevant thereto.

Dr. Hinshaw will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community's awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

It is also expected that Dr. Hinshaw will testify that the medical community could not become aware that insulators with prolonged intense exposure might be at risk for asbestos related diseases until the late 1960's or early 1970's. Dr. Hinshaw will not testify concerning the diagnosis or physical condition of these particular Plaintiffs. See above listed depositions for additional opinions.

34. Dr. John R. Holcomb, Pulmonary Physicians, 4410 Medical Drive, Ste. 440, San Antonio, TX 78229, (210) 692-9400.

Dr. Holcomb is a specialist in the area of respiratory diseases. Dr. Holcomb will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Holcomb will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Holcomb will also testify concerning those areas described for witnesses Demopoulos, Hinshaw, Weill, Craighead, Gaensler and Kerby. Dr. Holcomb may also testify regarding the medical conditions of each plaintiff based on review of medical records, x-rays, plaintiff's experts' reports and supplemental reports.

Dr. Holcomb will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with

asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

35. Thomas Howard, M.D., Osler Medical Center, Suite 300, 930 South Harbor City Blvd., Melbourne, FL 32901, (407) 725-5050.

Dr. Howard will testify regarding state of the scientific and medical art in the history and knowledge of asbestos-related diseases and asbestos-related diseases in general, and the medical condition of plaintiffs. Epidemiology and general medicine regarding asbestos exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure. As a basis for opinion, this witness will rely in part upon scientific papers published by Peto, Seidman and Selikoff, Morgan, and Lampshear, among others.

36. William Hughson, M.D., 3969 4th Avenue, Suite 202, San Diego, CA 92103, (619) 294-6206.

State of the scientific and medical art in the history and knowledge of asbestos-related diseases and asbestos-related diseases in general, and the medical condition of plaintiffs. Epidemiology and general medicine regarding asbestos exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure. As a basis for opinion, this witness will rely in part upon scientific papers published by Peto, Seldman and Selikoff, Morgan, and Lampshear, among others.

37. Dr. Dala R. Jarolim, 12305 S. 14th Street, Jenks, Oklahoma 74037-4903, (918) 683-3261.

Dr. Jarolim is an oncologist and will testify regarding the diagnosis of cancer, the inability of asbestos to cause cancer in various sites throughout the human body, other potential causes of cancer, whether or not the cancer alleged by Plaintiff was caused by exposure to asbestos.

38. Dr. Robert Jones, Tulane Medical School, 1700 Perdido Street, New Orleans, Louisiana, (504) 588-5265.

Dr. Jones is a specialist in the area of respiratory diseases. Dr. Jones will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Jones will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Jones will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Jones will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

39. Dr. Gerald Kerby, Kansas University School of Medicine, 3900 Cambridge, Kansas City, KS, (913) 588-6045.

Dr. Kerby is a specialist in the area of respiratory diseases. Dr. Kerby will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays

of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Kerby will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Kerby will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Kerby will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

40. Arthur Langer, Ph.D., Institute of Applied Sciences, Brooklyn College of the City University, New York, New York, (718) 951-4793.

Dr. Langer is a mineralogist with a Ph.D. from Columbia University. Dr. Langer is a professor of mineralogy at City University, New York, New York, and director of the Environmental Sciences Laboratory of the Institute of Applied Sciences, Brooklyn College of the City University of New York. Dr. Langer is expected to identify and describe the various methods by which inorganic material, from aerosols, bulk samples, or tissue, may be analyzed chemically, crystallographically, and structurally.

Dr. Langer is expected to testify about the various types of asbestos fiber, the geographic locations where the fibers can be found, the potential biologic activity of the various fibers in the human lung (including inorganic toxicity), the physical and chemical characteristics of the various asbestos fibers, and the identification and characterization of asbestos fibers.

Dr. Langer is expected to testify as to the types of inorganic minerals found in the lung tissue of persons with malignant mesothelioma and which are associated with the incidence

of malignant mesothelioma in humans. Dr. Langer is expected to identify the types of fiber that have been shown to create an increased risk for malignant mesothelioma. Dr. Langer is expected to testify as to the physical and chemical characteristics of the fibers that have been shown to create an increased risk of malignant mesothelioma. Dr. Langer is expected to testify as to the physical and chemical characteristics of the fibers that have been shown to create an increased risk of malignant mesothelioma. Dr. Langer is expected to testify as to the potential for certain finished asbestos containing products to be contaminated with inorganic minerals and the amounts of the types of trace contaminants that may be found in the products. Dr. Langer is expected to offer testimony as to the amount of contaminants that are found in finished asbestos-containing products--if any--and the chemical, crystallographic, and structural composition of the contaminants. Dr. Langer is expected to testify as to the levels of airborne contaminants that can be generated from a finished product--if any. Dr. Langer is expected to testify, based upon his review of the literature and of evidence of exposure, that exposure to certain encapsulated products did not result in a release of any contaminants sufficient to cause disease in persons such as plaintiff. Dr. Langer is expected to testify that his work, and the literature, do not establish that certain encapsulated products are contaminated with tremolite asbestos. Dr. Langer is expected to testify specifically regarding the products manufactured by Elliott Turbo Machinery Company (ETMC), the effect and result of Mr. Murphy's exposure to ETMC products, the effect and result of Mr. Murphy's exposure to other products during his worklife, and the risk of contracting any asbestos-related disease as a result of exposure to ETMC's products. Please see a report more fully discussing Dr. Langer's opinions attached as Exhibit "B". Dr. Langer can be made available for deposition upon reasonable and timely request. A copy of Dr. Langer's C.V. is attached as Exhibit "C".

41. James E. Lockey, M.D., M.S., 3848 Chimney Hill Drive, Cincinnati, Ohio 45241.

Dr. Lockey will testify regarding historical review and state of the art of pulmonary medicine and asbestos-related conditions. General and asbestos-related pulmonary medicine and epidemiology relevant thereto.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

42. Dr. John C. Maddox, Department of Pathology, Riverside Hospital, J. Clyde Morris Blvd., Newport News, Virginia 23601, (757) 594-2000.

Dr. Maddox shall testify as to the pathological diagnosis of asbestosis, lung cancer, colon cancer and mesothelioma, and the association between asbestos (including the various types)

and the alleged disease process involving the plaintiff. Dr. Maddox will further testify as to the contribution, if any, of exposure to John Crane's products in the causation of the plaintiff's asbestos-related disease. Finally, Dr. Maddox shall testify, in cases where sufficient lung tissue is available, as to the burden of asbestos (including the various types) in plaintiff's lungs and its contribution, if any, in causing plaintiff's asbestos-related disease.

43. Dr. Forde A. McIver, (by deposition), Pathology Associates, P.A., 135 Rutledge Avenue, Charleston, South Carolina 29401, (803) 768-8595. Testimony will be by deposition in "O.L. Allen v. Fibreboard Corporation", No. B-81-276-CA, in the U.S. District Court for the Eastern District of Texas, Beaumont Division, taken on April 9, 1982.

Dr. McIver will testify regarding historical review and state of the art of pulmonary medicine and asbestos-related conditions. Dr. McIver will testify as to the Saranac papers and to the effect that the Defendants could not have known end users were at risk until approximately the late 1960's or early 1970's. See deposition for additional opinions.

44. Dr. Joseph M. Miller, Box 365, New Hampton, New Hampshire, (603) 536-3732.

Dr. Miller will testify regarding historical review and state of the art of pulmonary medicine and asbestos-related conditions. Dr. Miller will testify as to the Saranac papers and to the effect that the Defendants could not have known end users were at risk until approximately the late 1960's or early 1970's.

45. William K.C. Morgan, M.C., University Hospital, University of Western Ontario, Post Office Box 5339, Postal Station A, London, Ontario, Canada N6A 5A5, (519) 663-3606.

Dr. Morgan is a professor of medicine and director of chest diseases services at the University of Western Ontario. He was educated in England and Scotland, and among other appointments, is a member of the Advisory Board for Occupation Health & Safety Resource Center at the University of Western Ontario. He has knowledge of the pathology, diagnosis, testing and causation of pulmonary and related diseases, including mesothelioma, lung cancer and asbestosis. He will testify about the state-of-the-medical-art as it relates to knowledge of health hazards associated with exposure to asbestos dust, based on his review of asbestos-related literature and his own experience. Dr. Morgan will also testify as to the Saranac papers and to the effect that Defendants could not have known end users were at risk until approximately the late 1960's or early 1970's. He may testify about the plaintiffs' medical condition.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

46. Jack E. Peterson, M.D., 2830 Via Viejas Oeste, Alpine, CA 91901, (619) 445-9668.

Industrial hygiene issues including threshold limit values. Historical review and state of the art of pulmonary medicine and asbestos-related conditions.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

47. Dr. Sheldon Rabinovitz, 966 Hungerford Drive, Suite 20, Rockville, MD 20852.

Dr. Rabinovitz will testify regarding the quantity and quality of information available to defendants relating to asbestos and its ability to cause disease and the reasonableness of the response thereto.

Dr. Rabinovitz will testify regarding the historical review and state of the art of pulmonary medicine and asbestos-related conditions and will further testify to the effect that Defendant could not have known end users were at risk until approximately the late 1960's or early 1970's.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of various disease processes. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

48. Dr. Jon Ritter, Division of Surgical Pathology, Suite 300, Peters Building, Washington University Medical Center, One Barnes Hospital Plaza, St. Louis, MO 63110, (314) 362-0101.

Dr. Ritter is a pathologist. Based on his review of medical records, including pathology materials, he will testify about the Plaintiff's(s') medical condition, and the cause of Plaintiff's(s') medical condition. His testimony will also include a discussion of asbestos and its effect on human health generally and Plaintiff's(s') specifically, and the effect that other substances have on human health generally and Plaintiff's(s') condition specifically. Dr. Ritter may also testify regarding the medical conditions of each Plaintiff based on review of medical records, x-rays, Plaintiff's(s') experts' reports and supplemental reports.

49. Dr. Victor L. Roggli, Duke University Medical Center, Dept. of Pathology, Box 3712, Durham, North Carolina 27710, (919) 286-0411.

Dr. Roggli is a pulmonary pathologist. Based on his review of medical records, including pathology materials, he will testify about the plaintiff's(s') medical condition, and the cause of plaintiff's(s') medical condition. His testimony will also include a discussion of asbestos and its effect on human health generally and plaintiff's(s') specifically, and the effect that other substances have on human health generally and plaintiff's(s') condition specifically.

50. Robert M. Ross, M.D., Certified American Board of Internal Medicine, Pulmonary Diseases, 6550 Fannin, Suite 2403, Texas Medical Center, Houston, TX 77030, (713) 383-6100.

Dr. Ross is a specialist in the area of respiratory diseases. Dr. Ross will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Ross will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Ross will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Ross will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

51. Wayne Ruhter and Helen Reynolds, Ruhter & Reynolds, Inc. 3625 N. Hall Street, Suite 1060, Dallas Texas 75219.

Wayne Ruhter and Helen Reynolds are economists and may testify regarding any economic loss alleged by the plaintiff.

52. Dr. Irving J. Selikoff, Deceased, Mt. Sinai School of Medicine, One Gustave Levy Plaza, New York, NY.

Dr. Selikoff will testify by deposition taken in Rogers v. Johns-Manville, on February 19, 1971, regarding the relationship between asbestos and disease, knowledge concerning same in state of the art, and all topics reflected in defendants deposition designations.

53. Dr. Kahili Sheibani, Department of Pathology, Western Medical Center, 1001 N. Tuston Ave., Santa Anna, CA 92705, (714) 953-3554.

Dr. Sheibani will testify regarding the pathology of the Plaintiff and/or Plaintiff's decedent. Dr. Sheibani will also testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology. Medical testimony as to medical condition of specific plaintiffs as identified during ongoing discovery.

54. Mr. Russell D. Sherwin, 2011 Zonal Avenue, HMR-201, Los Angeles, California 90033-1054.

Dr. Sherwin will testify regarding general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology. Dr. Sherwin will testify regarding the pathology of the Plaintiff(s) and/or Plaintiffs' decedent.

55. Dorsett D. Smith, M.D., 4310 Colby, Suite 201, Everett, WA 98203, (206) 259-5171.

Historical review and state of the art of pulmonary medicine and asbestos-related conditions. General and asbestos-related pulmonary medicine and epidemiology relevant thereto, cancer issues, including risk of cancer, carcinogenicity of worksite and environmental chemicals and substances, epidemiology.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

56. Jesse Steinfield, (by deposition).

Jesse Steinfield will testify concerning government warnings, union knowledge, smoking, and some areas of state-of-the art.

57. Dr. Paul M. Stevens, Board Certified Pulmonary Disease Specialist and Professor of Medicine at the Baylor College of Medicine in Methodist Hospital in Houston, Texas, (713) 790-6492.

Dr. Stevens is a specialist in the area of respiratory diseases. Dr. Stevens will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Stevens will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Stevens will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Stevens will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

58. Gail Stockman, M.D., 815 North Fourth Street, Suite A, Longview, TX 75601, (903) 753-0787.

Dr. Stockman is a specialist in the area of respiratory diseases. Dr. Stockman will testify as to all matters pertaining to her examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; her

opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; her prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Stockman will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically.

Dr. Stockman will testify regarding the historical review and state of the art of pulmonary medicine and asbestos-related conditions and will further testify to the effect that Defendant could not have known end users were at risk until approximately the late 1960's or early 1970's.

State of the scientific and medical art in the history and knowledge of asbestos-related diseases and asbestos-related diseases in general, and the medical condition of plaintiffs. Epidemiology and general medicine regarding asbestos exposure.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

59. J.C. Wagner, M.D., Cardiff, Wales, United Kingdom.

Dr. Wagner will testify regarding the historical review and state of the art of pulmonary medicine and asbestos-related conditions, general and asbestos-related pulmonary pathology, and epidemiology relevant thereto.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

60. Dr. Hans Weill, live or by deposition testimony in "Ernest Howell v. Armstrong World Industries, Inc., et al", No. M-80-169-CA, in the U.S. District Court for the Eastern District of Texas, Marshall Division, in the U.S. District Court for the Eastern District of Texas, Tyler Division, a Board Certified Pulmonary Specialist at Tulane Medical School, 1700 Perdido Street, New Orleans, Louisiana, 70310, (504) 588-5838.

Dr. Weill will testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos

fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community's awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure. Dr. Weill will testify regarding historical review and state of the art of pulmonary medicine and asbestos-related conditions, general and asbestos-related pulmonary pathology and epidemiology relevant thereto, cancer issues, e.g., cancer risk, carcinogenicity of worksite and environmental chemicals and substances, epidemiology.

It is also expected that Dr. Weill will testify that the medical community became aware that insulators with prolonged intense exposure might be at risk for asbestos related diseases in the late 1960's or early 1970's. Dr. Weill will not testify concerning the diagnosis or physical condition of these particular Plaintiffs.

61. William Weiss, M.D., c/o Hahnemann Medical College, Philadelphia General Hospital, Philadelphia, PA, (215) 762-7724.

Dr. Weiss will testify regarding the historical review and state of the art of pulmonary medicine and asbestos-related conditions, general pulmonary radiology and/or ILO interpretation of x-rays.

This witness may also provide opinions on the probable time period(s) of asbestos exposure with relation to the causation of the disease mesothelioma. In doing so, this witness will also provide percentages of probability of causation for exposure to asbestos from first exposure to last exposure.

62. Dr. Thomas Wheeler, (by deposition), The Methodist Hospital, Department of Pathology, 6565 Fannin Street, Mail Station 205, Houston, Texas 77030, (713) 790-3311.

Dr. Wheeler will testify regarding general pathology and the pathology of the Plaintiff and/or Plaintiff's decedent.

63. Dr. Mark Robert Wick, Division of Surgical Pathology, Box 214, University of Virginia, Medical Center, Charlottesville, Virginia 22908, (804) 924-9038.

Dr. Wick is a pathologist. Based on his review of medical records, including pathology materials, he will testify about the Plaintiff's(s') medical condition, and the cause of Plaintiff's(s') medical condition. His testimony will also include a discussion of asbestos and its effect on human health generally and Plaintiff's(s') specifically, and the effect that other substances have on human health generally and Plaintiff's(s') condition specifically. Dr. Wick may also testify regarding the medical conditions of each Plaintiff based on review of medical records, x-rays, Plaintiff's(s') experts' reports and supplemental reports.

64. Dr. R. Keith Wilson, 2753 S. Utica, Tulsa, Oklahoma, 74114.

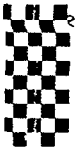
Dr. Wilson is a specialist in the area of respiratory diseases. Dr. Wilson will testify as to all matters pertaining to his examination of the plaintiff(s) and plaintiff's(s') medical records; any communications with the plaintiff(s) or plaintiff's(s') family; review of x-rays of the plaintiff(s); the diagnostic criteria used to diagnose asbestos related diseases; his opinion as to whether plaintiff(s) suffers from asbestos related disease and the basis of such opinion; the plaintiff's(s') current medical condition; his prognosis in regard to the plaintiff's(s') medical condition and/or plaintiff's(s') cause of death. Dr. Wilson will also testify about the general medical issues with emphasis on the respiratory system and the effect that asbestos and other substances have on human health generally and with respect to plaintiff specifically. Dr. Wilson will testify concerning his examination and diagnosis of the physical condition of the particular plaintiff and the relationship, if any, to the plaintiff's exposure to asbestos.

Dr. Wilson will also testify regarding the anatomy and function of the respiratory and circulatory systems; the symptomatology, disease process and diagnosis of asbestosis and cancer of the respiratory system, peritoneum and peritoneal cavity; the nature and extent of medical and scientific knowledge regarding any association of pulmonary disease with asbestos fiber and the effect of exposure to substances other than asbestos in the development and manifestation of diseases of the respiratory system; the methods of diagnosis and means of establishing the differential diagnosis of asbestos-related diseases with non-asbestos related diseases; the incidence of lung cancer in the general population and those individuals exposed to asbestos; cigarette smoking and its effect on the lungs; the difference between impairment and disability; the effect of asbestosis on disability and life expectancy; the lack of relationship between pleural plaques and development of any cancer; the history of evolution and knowledge of asbestos-related diseases; and the evolution of the medical community awareness of the increased risks for an asbestos-related disease in cases of prolonged exposure.

65. Any prior deposition or trial testimony of any witness called by any other party either live or by deposition.

66. Any prior deposition or trial testimony of any physician who has treated, examined, or been consulted regarding the Plaintiff.
67. Any deposition or custodian of records concerning the Plaintiff.
68. Any deposition taken by any party in this case and the depositions listed in Defendants' Designation of Deposition Testimony.
69. All physicians who have seen, examined, or treated, Plaintiff and/or autopsied Plaintiff's decedent.
70. Defendants reserve the right to use any affidavit, deposition, answer to interrogatories, and/or answers to requests for admissions made by any party to this action.
71. Defendants reserve the right to call any witness who may be necessary for rebuttal testimony.
72. All other expert and factual witnesses designated or listed by plaintiffs and defendants in this lawsuit.

Exhibit “B”



March 18, 2001

Mr. John W. Arnold, Esquire -
DeHay & Elliston, L.L.P. -
3 5 00 Bank of America Plaza 901 Main Street
Dallas, Texas 75202-3736

Re: Malcom Lee Murphy Jr. v. OCF et al,

Dear Mr. Arnold:

I have reviewed the deposition testimony given by Mr. Murphy in the above-cited matter, as well as the discovery documents forwarded to me under cover letters dated February 21 and March 9 of this year. Based on review of these documents, and information available in the open literature, I was able to estimate Mr. Murphy's asbestos exposure over his working lifetime. Further, given the information provided by the Elliott Turbo Machinery Company (ETMC), I was also able to estimate an asbestos exposure over the same time period resulting from his personal contact and work with these devices. These data and information support the conclusion that Mr. Murphy's lifetime exposure to asbestos, which resulted from handling, installing and repairing Elliott turbines was virtually nil, that if it occurred at all was so low as to result in a mesothelioma risk approximating zero.

General Occupational History.

Mr. Murphy testified that his career in boiler and turbine installation essentially began at age 13 years, just prior to the outbreak of the Second World War. At that time he worked for his father and he states that he experienced both direct and indirect exposure to asbestos-containing dusts. This likely began with onset of employment, circa 1941. During this time, 1941-1943, he worked principally during the summer months, attending school during the rest of the year. He experienced "hands on" work, getting his "hands dirty." From the mid- 1 940s until the early- 1 980s Mr. Murphy was involved in both boiler and turbine installation in power plants, sugar refineries, and other places. Although his work involved mechanical aspects of installation, history of insulation rip out and installation was also given. Mr. Murphy reported throughout discovery deposition that he worked with, and was exposed to, insulating block, pipe insulation, cements, Transite panel, gunning mixes, and gaskets.

Alleged Asbestos Exposure.

Mr. Murphy alleges both direct and bystander exposure to asbestos-containing products during his working lifetime. He stated he was exposed to asbestos-containing products when "...taking it off ... I was probably more exposed to asbestos than any other time ... you can't work around while they're building a steam plant and not be exposed to some insulation ... observed insulation going on..." etc. On the 62 job-sites he recorded, some 127 insulating products were specifically identified in plaintiffs answers to interrogatories, for example, 20 asbestos-containing cements, 8

brand named pipe insulations, 9 brand named block. Elliott turbines were cited to have been installed at six of the 103 installations named.

The thermal system insulation materials cited by Mr. Murphy as introduced into his working environment included virtually every common asbestos-containing product marketed in the United States. I-Es testimony asserts that his working environment approximated that of an insulation worker. He stated that he personally experienced and undertook tear-off of insulation for the recovery of used boilers, and experienced working in cramped enclosures such as in steam tunnels. He further alleged that he commonly experienced exposure to fugitive dust (bystander exposures) at worksites where other trades applied insulation and undertook these same activities.

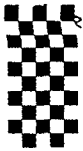
Calculation of Exposure to Asbestos from Insulating Products.

Given Mr. Murphy's testimony, the first 20 years of his full-time occupational history is estimated to have involved direct exposure to insulation products 10% of the time (4 hours, or one-half day per week). Exposure during this time period may have reached the median value for a construction insulation worker, or about 12.5 fibers per cubic centimeter of air (estimated by Dr. William Nicholson as between 10 and 15 fiber per cubic centimeter of air as an 8-hour time-weighted average). This exposure results in a yearly cumulative exposure of about 1.25 fiber-cc-year. Twenty years work under these conditions results in a lifetime cumulative exposure of 25 fiber-cc-years. As a bystander Mr. Murphy's exposure is estimated to have experienced about 1% of the median value, but over his entire occupational history of 40 years. This calculates to about 5 fiber-cc-years. Thus Mr. Murphy's total lifetime exposure to asbestos released from insulating products calculates to about 30 fiber-cc-years.

Calculation of Exposure to Asbestos from Elliott Turbines.

Mr. Murphy testified in deposition on November 18 1999 that he installed or worked on several Elliott turbines over his working lifetime. Among these 2 were installed in Stillwater Oklahoma, 3 units in foreign countries, and 1 was worked on in his employer's plant. The Stillwater installation included construction of piping connections. The insulation on the pipe system was subcontracted to another firm. He stated he was exposed as a bystander to dust generated from asbestos-containing block, pipe and cements. On another occasion during testimony he stated that Elliott did not sell insulation with their turbine but rather "... we didn't buy the insulation and lagging, we made our own."

Elliott turbines came to the installation site assembled, "shipped as a complete unit." Start up instructions included proper pad and pipe construction, exposure and inspection of mechanical parts prior to operation, bearings inspection, oiling instructions, hand-cranking of movable parts prior to machine-driven operation, replacement of covers to interior compartments, beginning operation of system under power (see Elliott Mechanical Drive Turbine Instructions AY, BY, CY, Books #s 46 and 60). The asbestos contained within these systems consisted of packing in the governor assembly. In which the packing was compressed under the stem-packing nut. None of the packing material was exposed (see, e.g., mechanical drawing Figure 3, page 6, Instruction Book # 46). Further, a work order from the Murphy Boiler Company indicated that repair of the governor assembly involved one hour of work. There is no indication that any asbestos-



containing element contained within the Elliott turbines was ever exposed. Further, Elliott did not furnish insulation for any of its turbines, at least those that required insulation, but rather left this matter to the discretion of the installation contractor. The total asbestos exposure resulting from handling Elliott turbine closely approximated zero.

Even during repair of the governor assembly, both graphite- and Teflon- impregnated packing was available for use. Simulation study of graphite-impregnated packing in our laboratory yielded an 8-hour time-weighted average for fiber release of less than 0.001 fibers per cc of air. Consider work on 80 Elliott turbines in which one hour is involved in governor installation, repair, etc. These ten full days of contact results in a cumulative exposure of 0.0005 fiber-years. This value, a "worst case" scenario, would represent the entire contribution that Elliott turbines made to Mr. Murphy's total asbestos exposure.

Exposure Contribution from Elliott Turbines

Compare the cumulative asbestos exposure from insulation products, estimated at 30 fiber-years, with the cumulative asbestos exposure from Elliott turbines, estimated at 0.0005 fiber-years. The differential is about 60,000. Exposure to chrysotile in the ambient air of cities calculates to orders of magnitude greater exposure. Further, fiber type adds to the disparate risk differential.

Conclusion.

Elliott turbines presented virtually no risk of asbestos disease, especially mesothelioma, to Mr. Murphy. The calculated risk of mesothelioma, based on dose and fiber type, approaches one-in-a-million.

Additional Information.

I am attaching my Curriculum Vitae to this report. You will read that I have been involved in asbestos research for the past 35 years during which time I have contributed both to the literature and to the international scientific community. You will further note that I served as the Associate Director of the Environmental Sciences Laboratory in the Mount Sinai School of Medicine during the time that Dr. Irving I. Selkoff was its Director.

Please inform the Court that my fees for consulting on legal matters are \$250 per hour for general work, e.g., document evaluation, \$ 300 per hour for deposition testimony, and \$350 per hour for trial testimony.

If you have any questions concerning this report, or any of the additional materials, please do not hesitate to contact me.

Sincerely,

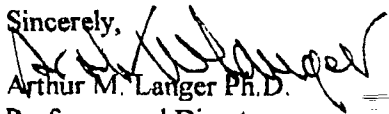

Arthur M. Langer Ph.D.
Professor and Director

Exhibit “C”

REVISED: December 15, 2000

CURRICULUM VITAE

Arthur M. Langer, Ph.D.

CURRENT POSITIONS: Director, Environmental Sciences Laboratory of the Institute of Applied Sciences, Brooklyn College of the City University of New York, Brooklyn, NY 11210.

Deputy Director of the Center for Applied Studies of the Environment, Applied Sciences Coordinating Institute, City University of New York.

Professor of Geology and Deputy Executive Officer, Ph.D. Program in Earth and Environmental Sciences, The Graduate School and University Center, New York, NY.

Professor of Geology, Department of Geology, Brooklyn College of the City University of New York.

Research Associate, Department of Earth and Planetary Sciences, American Museum of Natural History, New York, NY.

ADDRESS:

University Office: Environmental Sciences Laboratory
Ingersoll Hall - Room 5144-6
Brooklyn College of the City University of New York
2900 Bedford Avenue
Brooklyn, NY 11210
Telephone: (718) 951-4793
Electronic Mail: ALANGER@brooklyn.cuny.edu

Ph.D. Program in Earth and Environmental Sciences
The Graduate School and University Center
365 Fifth Avenue
New York, NY 10016

Home Office: 6 Rochambeau Drive
Hartsdale, NY 10530
(914) 428-3667
(914) 946-6524
Electronic Mail: ARTLANGER@AOL.com

ACADEMIC DEGREES:

B.A., Geology, Hunter College-CUNY, New York, NY, 1956.

M.A., Geology (Petrology), Columbia University, New York, NY, 1962.

Ph.D., Geology (Mineralogy), Columbia University, New York, NY, 1965.

PREVIOUS POSITIONS:

Associate Professor, Center for Polypeptide and Membrane Research, Mount Sinai School of Medicine, New York, NY 1986-1989.

Associate Professor, Mineralogy, Department of Community Medicine, Mount Sinai School of Medicine, New York, NY, 1968-1986, 1987-1988.

Science Administrator, Environmental Sciences Laboratory, Mount Sinai School of Medicine, New York, NY, 1983-1984.

Associate Director, Environmental Sciences Laboratory, an NIEHS Center, Center for the Study of Biological Effects of Environmental Agents, Mount Sinai School of Medicine, New York, NY, 1969-1986.

Director of Laboratories, Environmental Sciences Laboratory, Mount Sinai School of Medicine, 1976-1986.

Head, Physical Sciences Section, Environmental Sciences Laboratory, Mount Sinai School of Medicine, New York, NY, 1969-1986.

Adjunct Associate Professor, Mineralogy, Graduate Division, City University of New York, NY, 1968-1969.

Assistant Professor, Mineralogy, Department of Community Medicine, Mount Sinai School of Medicine, New York, NY, 1967-1968.

Research Associate, Environmental Medicine, Department of Medicine, Mount Sinai Hospital, New York, NY, 1965-1967.

Lecturer, Geology, City College of City University of New York, NY, 1964-1965.

Research Assistant, Mineralogy, Department of Geology, Columbia University, New York, NY, 1961-1964.

Teaching Assistant, Economic Geology, Department of Geology, Columbia University, New York, NY, 1959-1960.

Teaching Assistant, Department of Geology, Columbia College, New York, NY, 1958-1959.

Field Assistant, Geology, Beartooth Mountains, MT, Columbia University, 6/57-8/57; 6/58-8/58.

Exploration Geologist, Rosario Exploration Chibougamau Mining and Smelting, 6/56-8/56.

Consulting Mineralogist, Columbia University, New York, NY:

- Texas Gulf Sulphur Company, 1965 (with Professor Paul F. Kerr).

- Tidewater Oil Company, 1962 (with Professor Kerr).

- Consulting Mineralogist, Creole Oil Company, 1962 (with Professor Kerr).

- Consulting Mineralogist, American Metals Climax, 1961 (with Professor Kerr).

- TAMS Dam site, East Pakistan, WHO, 1960 (with Professor Rhodes Fairbridge).

FELLOWSHIPS:

Research Mineralogist, Department of Geology, Columbia University, New York, NY.
Sponsored by the U.S. Air Force Cambridge Research Laboratories under the
direction of Prof. P.F. Kerr, 3/61-9/63.

FELLOWSHIP IN PROFESSIONAL ORGANIZATIONS:

Fellow of the Geological Society of America.
Fellow of the Mineralogical Society of America.
Fellow of the New York Academy of Sciences.
Fellow of the Collegium Ramazzini.

HONORS AND AWARDS:

Fellow, Collegium Ramazzini, 1983.
Biography in: American Men of Science; Who's Who in the East; Who's Who in
America (September, 1992).
Letter of Commendation – Mayor of the City New York. August, 1979. Asbestos in
School Buildings.
Hunter College Hall of Fame HC-CUNY, 6/78.
Phi Beta Kappa, Nu Chapter, Hunter College, New York, NY, 6/77.
Career Scientist Award, National Institute of Environmental Health Sciences, 6/69-
5/74.
The John Polachek Foundation Award, For Medical Research - 9/65-6/67.
Sigma Xi, Kappa Chapter, Columbia University, New York, NY, 9/64.
Department Honors, Department of Geology, Hunter College, New York, NY, 6/56.

LABORATORY ORGANIZED CONFERENCES – ESL CUNY:

An International Workshop on the Health Effects of Chrysotile Asbestos: Contribution
Of Science to Risk Management Decisions. Sponsored by the Mineralogical
Society of America, Mineralogical Association of Canada. Montreal, Quebec.
September 14-16, 1997.

An International Workshop of Simian Virus 40 (SV – 40), Asbestos and Mesothelioma.
Sponsored by the Coalition to Support Mesothelioma Research. New York, NY
November 9-10, 1997.

AMICI CURIAE:

Atlantic Legal Foundation. Amici Curiae in support of Respondents to the Supreme
Court of the United States. October Term, 1992. Daubert et.al. Petitioners v.
Merrell Dow Pharmaceuticals, Inc., Respondent.

Atlantic Legal Foundation. Amici Curiae in support of Petitioners to the Supreme Court of the United States. October Term, 1996. General Electric Company, Westinghouse. Electric Company and Monsanto Company, Petitioners v. R. Joiner & K. Joiner, Respondents.
Atlantic Legal Foundation. Amici Curiae in Support of Defendants-Appellees to the United States Court of Appeals for the Fifth Circuit. Moore (plaintiff-appellant) vs Ashland chemical (defendant-appellee). Term 1998.

GRADUATE THESES:

Geology of the Manhattan Formation. Submitted in partial fulfillment for the degree of Master of Arts, in the Faculty of Pure Science, Columbia University, NY, p. 132, 1962.
Mineralogy and Physical Properties of Mojave Desert Playa Crusts. Submitted in partial fulfillment for the degree of Doctor of Philosophy, in the Faculty of Pure Science, Columbia University, NY, p. 155, 1965.

EDITORIAL BOARD SERVICE:

Assistant Editor, Environmental Research, 1978-1985.
Advisory Editor, Environmental Research, 1985-1987.
Assistant Editor, American Journal of Industrial Medicine, 1980-1985.
Associate Editor, American Journal of Industrial Medicine, 1985-1986.
Editorial Review Board, Journal of Environmental Pathology and Toxicology, 1978-1982.
Editorial Advisory Board, Advances in Modern Environmental Toxicology, 1981-1982.
Editorial Review Board, Journal of Environmental Pathology Toxicology and Oncology, 1983-Present.

REVIEW MANUSCRIPTS (Journals other than those cited above):

Journal of Histochemistry and Cytochemistry.
Pharmacology Reviews.
American Chemical Society Reviews.
Advances in Chemistry
Annals New York Academy Sciences.
Science (AAAS).
SEM-IITRI Symposia. Scanning Microscopy International.
Lung.
American Review of Respiratory Diseases.
American Mineralogist.
Clay Minerals Society (Clays and Clay Minerals).
Canadian J. Fisher Aquatic Sciences.
Journal National Cancer Institute.
American Journal Pathology.

Annual Meeting SEMA.
 Chest.
 Laboratory Investigations.
 Journal of the American Medical Association.
 New England Journal of Medicine.
 Toxicology In Vitro.
 Journal of the American Industrial Hygiene Association.
 Annals of Occupational Hygiene.
 Pathology Annual.
 Environmental Health Perspectives.
 Health Effects Institute.
 Bulletin of the Geological Society of America.
 Applied Occupational and Environmental Hygiene.
 Medical Research Engineering.
 American College of Chest Physicians.
 Heterogeneous Chemistry Reviews.
 American Institute for Testing Materials (ASTM)
 Canadian Mineralogist
 Journal of the American Industrial Hygiene Association
 Journal of Indoor and Built Environment.

REVIEW AND CONTRIBUTIONS TO FEDERAL AND INDUSTRY DOCUMENTS (1978-PRESENT):

NIOSH Fibrous Glass Criteria Document, 1978. Reviewer. CDC-NIOSH.
 NIOSH Talc Criteria Document, 1979. Reviewer, contributor. CDC-NIOSH.
 OSHA Fiber Manuscript (Definitions, Nomenclature, Properties), 1980. Reviewer. US Department of Labor.
 ALOSH Mineralogy Manuscripts (Occupational Lung Disease), 1979-1980. Reviewer, contributor. CDC-NIOSH.
 Asbestos, Smoking and Disease. The Scientific Evidence. Burns, DM, Ed., Commercial Union Insurance, 1982. Contributor.
 Environmental Protection Agency, Office of Pesticides and Toxic Substances-Asbestos in Buildings Guidance Documents; Guidance Documents; Operations and Maintenance Programs. "Orange", "Purple", "Blue" Books. Reviewer, contributor. US Environmental Protection Agency.
 Surgeon General's Report: Cancer and Chronic Lung Disease in the Workplace: The Health Consequences of Smoking, 1985. Reviewer, contributor. Federal.

INTERNATIONAL GOVERNMENT, LABOR, COMMITTEES AND CONSULTATIONS:

US-Japan Cooperative Science Program Working Group on Air Pollution and Health.
 NIEHS-Institute of Health, Japan, February, 1969.
 Environmental Protection Agency, Superfund Cases, 3/85-Present.
 National Institute for Occupational Safety and Health, 6/75-Present.

National Institute for Environmental Health Sciences, 4/75-Present.
 Environmental Protection Agency, 6/75-Present.
 National Heart, Lung and Blood Institute, 6/75-Present.
 National Institutes of Health, Section of Grants, 6/74-Present.
 World Health Organization, Geneva, Biomedical Expert, 6/75-Present.
 International Agency for Research on Cancer, WHO Development of V.14 Chemical Carcinogenesis Monograph Series, Evaluation of Carcinogenic Risk of Chemicals to Man: Asbestos. Member of working group, Lyon, France, 1976.
 International Association of Geochemistry and Cosmochemistry, Working Group on the Geochemistry of Health and Disease, 1976-1979.
 Consultant, South African Ministry of Mines, Asbestos Symposium, Johannesburg, South Africa, 1977.
 Consultant, Institute of Public Health, Norway, Microscopy Facility, Oslo, Norway, 1977. Seminars on vitreous fibers as asbestos substitutes.
 Consultant, International Metalworkers Federation, Problems Focusing on Asbestos Contamination of Nickel Ores, Geneva, Switzerland, 1980.
 Research Consultant, Societe Nationale de l'Amiante, Quebec, Canada, Work on Modified Fiber, 1984.
 WHO-International Program on Chemical Safety (IPCS), Environmental Health Criteria Document on Asbestos and Other Natural Mineral Fibers, Section Chairman, Hannover, Federal Republic of Germany, 1985.
 Societe Nationale de l'Amiante. Consultant. Modified Fiber and the Environmental Protection Agency Asbestos Ban, Montreal, Canada, 1986.
 International Agency for Research on Cancer, WHO Development of V.42, Chemical Carcinogenesis Monograph Series, Evaluation of Carcinogenic Risk to Chemicals in Man: Silica and Some Silicates, Member of Working Group, Lyon, France, 1986.
 Consultant, Asbestos Institute, Canada, Organization of Symposium on Biological Effects of Asbestos Substitutes, 1987.
 VIth International Pneumoconiosis Conference. International Organizing Committee; Organizer of Session: Hazard Recognition of Mineral Dust. Pittsburgh, PA, August, 1988. Chaired Two Sessions at Meeting: Mineral Recognition by Membranes and Mineral Toxicity; Mineral Fiber and Diseases of the Pleura.
 International Federation of Building and Wood Workers, Conference on Interior Works, Geneva, Switzerland. Presented paper: Hazards in the Painting Trades. Panel on Hazards in the Interior Workplace, May 9-12, 1989.
 Hoffman-LaRoche Pharmaceuticals. Development of Microscopy Method for the Analysis of Mineral Fiber in Parenteral Drugs. Edinburgh, April, 1993; Basel, March, 1994; Frankfurt, May, 1994.
 Eurometaux - European Association of Metals. Protocol Format and Development of Proposed Meeting on Carcinogenicity of Metals and the Compounds. Brussels, November, 1994.
 Eurometaux - European Association of Metals. Protocol Format and Development of Proposed Meeting on Carcinogenicity of Metals and the Compounds. Brussels, September, 1995.

NATIONAL COMMITTEES, WORKSHOPS:

- Food and Drug Administration, Asbestos, Talc, Asbestos Bodies, and Consumer Talcum, Seminar, Washington, DC, June, 1968.
- National Air Pollution Control Administration, Asbestos in Ambient Air. Arlington, VA, June, 1969.
- National Institute for Occupational Safety and Health, USPHS, Asbestos Research in the United States, Cincinnati, OH, January, 1970.
- Food and Drug Administration, Asbestos in Consumer Talcums, Seminar, Washington, DC, August, 1971.
- Environmental Protection Agency, National Air Pollution Control Techniques Advisory Committee, Asbestos Emissions Document, Atlanta, GA, 1971.
- NIOSH Task Force on Occupational Respiratory Diseases, 1975.
- Environmental Protection Agency, HERL, Ad Hoc Committee for the Fibrous Amphibole Study Protocol, Triangle Park, NC, 1976.
- NIEHS-NIOSH-EPA-ERDA. Interagency Retreat and Colloquium. Man-made Vitreous fibers, Asbestos Substitutes and the Energy Crisis. Potential Risks to Health. Pinehurst, NC. 7-9 January, 1976.
- NIOSH Criteria Document Recommended Standard For Occupational Exposure to Fibrous Glass, Reviewer. November, 1976.
- Environmental Protection Agency, HERL, Biological Effects on Fibrous Inorganic Particles, 1977.
- NIH Possible Health Effects of Asbestos in the Local Environment. Bethesda, June 8, 1977.
- NHLBI, Evaluation of Existing Inorganic Microparticulate Laboratories: Vermont Lung Group, Tulane Occupational Lung Hazards Group, 1978.
- DHHS, Interagency Committee to Coordinate Environmental and Related Problems, Biological Effects of Fibrous Particulates: Serpentine-Containing Host Rocks, Amphibole-Containing Host Rocks, 1980.
- Mount St. Helen's Volcanic Ash: Mineral Nature and Biological Activity, Interagency Task Force, Bethesda, MD, 1980.
- National Institute of Environmental Health Sciences, Workshop, Pathobiology of Mesothelioma, RTP, NC, January, 1983.
- Occupational Safety and Health Administration, Expert to write and review Asbestos Standard-Talc Standard, US Department of Labor, 1983.
- National Academy of Sciences, Division of Life Sciences Committee to Evaluate Risk to Low-Level Exposure to Asbestiform Fibers in the Environment, 1982-1984.
- Environmental Protection Agency. Prepared for meeting Substitute Fibers. Pre-market Testing of Fibers. USEPA, Washington, DC. 26 June 1984.
- Lung Center and NHLB-SCOR, in the Departments of Physiology, Medicine, Pathology, and Engineering in the University of Vermont, Burlington, VT, 1984.
- Environmental Protection Agency, Committee Member, Review and Rewrite EPA "Guidance Document for Controlling Friable Asbestos-Containing Minerals in Buildings," 1985.
- American Society Testing Materials, Committee, D22-Indoor Air Pollution Asbestos:

D22.05-Methodology and Measurement of Fibers in Air. Electron Microscopy, 1985.

American Society Testing Materials, Organizing Committee, Silica and Silica-Induced Diseases, International Conference, 1985.

NIOSH, Mine Health Research Advisory Committee Meeting, Tucson, AZ: The Impact of Mineral-Asbestos Definitions on the Mining Industry, 1986.

Environmental Protection Agency. Develop guidance document for identifying asbestos hazards and implementing abatement programs in public buildings, Washington, DC, April, 1986.

NIOSH Review Panel for Project "Evaluation of Mesothelioma Production by Asbestos Substitutes." Cincinnati, OH, June, 1986.

Environmental Protection Agency, Guidance Document for Assessing and Managing Exposure to Asbestos in Building, Arlington, VA, September, 1986.

Environmental Protection Agency, Operations and Maintenance Programs for Asbestos-Containing Materials in Buildings: A Guide for Building Owners and Managers, Washington, DC, January, 1987.

NIEHS-NIOSH - National Toxicology Program. To formulate study protocol comparing biological activities of asbestiform and non-asbestiform amphibole minerals. NIEHS - Res. Triangle Park, NC, October 11, 1989.

Health Effects Institute. Asbestos Literature Review Panel. April, 1990 - August, 1991.

Health Effects Institute. Reviewer of Research Proposals - RPI-1-91.

US FDA and Intl. Soc. Reg. Tox. Pharmac., NIH Bethesda, Workshop. Talc: Consumer Uses and Health Perspectives. 31 Jan - 1 Feb, 1994.

TESTIMONY BEFORE FEDERAL AGENCIES, COURTS:

Testimony Occupational Safety and Health Administration, U.S. Department of Labor. Asbestos Standard Revisions. Asbestos Fiber and Cleavage Fragments, April, 1990. Washington, D.C.

Testimony, Consumer Products Safety Commission. Asbestos in Play Sand. Washington, DC, December 7, 1988.

Testimony, Occupational Safety and Health Administration, US Department of Labor, Asbestos Standard, 1984. Modified Asbestos and It's Biological Behavior. Washington, D.C.

Expert Witness, Contamination of Lake Superior. On behalf of the Department of Justice of the United States, 1974. Minneapolis, MN. Mineral Fiber Analysis.

Testimony, Toxic Substances Control Act, 1973. Presented evidence to Sen. Tunney's committee hearing, concerning asbestos in society. Washington, D.C.

Testimony National Toxicology Program Committee evaluating Talc as a human carcinogen. Washington DC, 13-14 December, 2000.

REGIONAL CONSULTATIONS:

Health Research Council of New York City, Subcommittee on Asbestos Hazards - Air

Pollution Working Corp. Seminar on Asbestos in Construction Products, Rockefeller University, June 9, 1969.
New York City Board of Education: Asbestos in Schools, 1981-1983.
New York City Department of Sanitation; Fire Department: Insulation Products, 1979-1983.
New York State Consumer Affairs and Protection: Construction and Insulation Products, 1980-1983.
City University of New York-Brooklyn College: Asbestos Problems, 1981-1982.
New York City Asbestos Taskforce. Inspector General's Office. Asbestos in schools. Analysis and evaluation of samples removed from school buildings. Fall, 1993.

ACADEMIC SERVICE AND COMMITTEES:

Academic Council, Department Representative, MSSM, 1977-1979.
Elections Committee of the Academic Council, MSSM, 1978-1980.
Medical Center Safety Committee, MSSM, 1979-1988.
Chemical Hazards Committee, MSSM, 1979-1988.
Alternate Medical Safety Officer (in absence of Dr. S. Kochwa), MSSM, 1980-1983.
Space Committee (Department and Institution), MSSM, 1982-1985.
New York Academy of Sciences, Conference Organizing Committee, 1976-1980.
Visiting Professor Program. Mt. Sinai School of Medicine. 1971-1973.
Educational Policy Committee. Mt. Sinai School of Medicine. 1972-1974.
Ad Hoc Reviewer, National Institutes of Health, Minneapolis Medical Center, 1977.
Ad Hoc Reviewer, National Institutes of Health, Harvard Medical Center, 1978.
Workshop Organizer and Chairman, Significance of Aspect Ratio in Asbestos Diseases, New York Academy of Sciences, 1977.
Workshop Organizer, Third International Workshop on In Vitro Testing of Mineral Dusts, 1984.
Curriculum and Examination Committee, Ph.D. Program, Earth and Environmental Sciences, City University of New York, 1987-1990; 1996-present.
Faculty Membership Committee - Chairman - Ph.D. Program, Earth and Environmental Sciences, City University of New York, 1989-1992; 1996-present.
Executive Committee, Ph.D. Program, Earth and Environmental Sciences, City University of New York, 1985-1993; 1995-present.
First Examination Committee, Ph.D. Program, Earth and Environmental Sciences, City University of New York, 1996-present.
Elections Committee, Ph.D. Program, Earth and Environmental Sciences, City University of New York, 1996-present.
Graduate Faculty Council, The Graduate Center of the City University, 2000-2003.

CONSULTATIONS:

Oil, Chemical and Atomic Workers International Union, Safe Handling of Asbestos, Training Film, 1976.
 Cyprus Minerals-Nature of US Talc Deposits, 1979.
 General Accident Insurance Company: Asbestos Compensation, 1981.
 Gulf Minerals: Modified Chrysotile Fiber, 1982.
 Societe Nationale de l'Amiante: Phosphorylated Fiber; Asbestos Substitutes, 1984.
 W.R. Grace & Company: Asbestos and Indoor Air Pollution, 1984.
 Asbestos Institute of Canada, Asbestos and Asbestos Substitutes, 1985-1986.
 R.T. Vanderbilt Company, Nature of Tremolite in the Gouverneur Talc Deposit, 1987.
 Safe Building Alliance, Problems of Asbestos in Buildings, 1987.
 Review applications for funding requests: FCAC, Quebec, Canada, 1985.
 United States Consumer Products Safety Commission, 1986-1987.
 Society Nationale d'L'Amiante - Canada, 1987.
 US National Toxicology Program, 1989.
 Battelle Columbus Laboratories, 1987-1989; 1991.
 Durabla Gasket Manufacturing Co., 1992.
 Hoffmann-LaRoche-Basel, 1993.
 Lapinus Fibres-BV-Netherlands, 1993-1994.
 Ready Mix Group-Australia, 1994.
 Cleveland-Cliffs Group, 1995-1996.
 Blown Glass Wool Contractors Assn., 1996.
 Novacor Chemicals-Canada, 1996.
 Talc Luzenac-Paris, 2000.

PUBLICATIONS IN PEER-REVIEWED JOURNALS:

1. Kerr PF, Thomas AM, Langer AM: The nature and synthesis of ferrimolybdate. *Amer Mineral* 48:14-32, 1963.
2. Kerr PF, Langer AM: Mineralogical features of Mojave playa crusts. In: Mineralogy and Hydrology of US Playas. Neal J (ed), US Air Force Cambridge Research Laboratories Environmental Research Paper No. 96, pp. 31-72, 1965.
3. Langer AM, Kerr PF: Experimental variables influencing DTA curves of kaolinite. *Dupont Thermogram* 3:1-4, 1966.
4. Langer AM: Older Paleozoic metamorphism and pegmatization in Bronx, New York. *Ann NY Acad Sci* 136:1-32, 1966.
5. Langer AM, Kerr PF: Mojave Desert playa crusts: physical properties and mineral content. *J Sed Petrol* 36:377-396, 1966.
6. Langer AM, Kerr PF: Evaluation of kaolinite and quartz differential thermal curves with a new high-temperature cell. *Am Mineral* 52:509-523, 1967.

7. Berkley C, Langer AM, Baden V: Instrumental analysis of inspired pulmonary particulates. *Trans NY Acad Sci* 30:331-350, 1967.
8. Neal JT, Langer AM, Kerr PF: Giant desiccation polygons of Great Basin playas. *Bull Geol Soc Am* 79:59-90, 1968.
9. Langer AM, Bowes DR: Polyphase deformation in the Manhattan formation of Manhattan Island, New York City. *Memoir 115 Geol Soc Am* 358-373, 1969.
10. Langer AM, Selikoff IJ, Sastre A: Chrysotile asbestos in the lungs of persons in New York City. *Arch Environ Health* 22:348-361, 1971.
11. Langer AM, Mackler AD, Rubin IB, Hammond EC, Selikoff IJ: Inorganic particles in cigars and cigar smoke. *Science* 174(4009):585-587, 1971.
12. Selikoff IJ, Nicholson WJ, Langer AM: Asbestos air pollution in urban areas. *Arch Environ Health* 25:1-13, 1972.
13. Liebling R, Langer AM: Optical properties of fibrous brucite from Asbestos, Quebec. *Am Mineral* 57:857-864, 1972.
14. Langer AM, Rubin IB, Selikoff IJ: Chemical characterization of asbestos body cores by electron microprobe analysis. *J Histochem Cytochem* 20 (9):723-734, 1972.
15. Langer AM, Rubin IB, Selikoff IJ, Pooley, FD: Chemical characterization of uncoated asbestos fibers from lungs of asbestos workers by electron microprobe analysis. *J Histochem Cytochem* 20(9):735-740, 1972.
16. Bowes DR, Langer AM: Petrochemistry of the Manhattan formation, New York City. *Krystalinikum* 10:39-51, 1974.
17. Langer AM, Ashley R, Baden V, Berkley C, Hammond EC, Mackler AD, Maggiore CJ, Nicholson WJ, Rohl AN, Rubin IB, Sastre A, Selikoff IJ: Identification of asbestos in human tissues. *J Occup Med* 15:287-295, 1973.
18. Ehrenreich T, Mackler AD, Langer AM, Selikoff IJ: Les fibers d'amiante dans les poumons humains: leur signification medicolegale dans les maladies de l'environnement. *Arch des Maladies Professionnelles* 34(4-5):189-204, 1973.
19. Bowes DR, Langer AM: Hornblende schists in the Manhattan formation in the Bronx, New York: Discussion. *Bull Geol Soc Am* 84:1483-1490, 1973.
20. Ehrenreich T, Mackler AD, Langer AM, Selikoff IJ: Identification and

characterization of pulmonary dust burden in pneumoconiosis. *Ann Clin Lab Sci* 3(2):118-131, 1973.

21. Kleinfeld M, Messite J, Langer AM: A study of workers exposed to asbestiform minerals in commercial talc manufacture. *Environ Res* 6(2):132-143, 1973.
 22. Nicholson WJ, Langer AM, Selikoff IJ: Discussion: asbestos fibers in the air of towns. *Atmosph Environ* 7:666-668, 1973.
 23. Langer AM: Inorganic particles in human tissues and their association with neoplastic disease. *Environ Health Perspect* 9:229-233, 1974.
 24. Langer AM: Approaches and constraints to identification and quantitation of asbestos fibers. *Environ Health Perspect* 9:133-136, 1974.
 25. Langer AM: Research perspectives concerning asbestos minerals and their effects on biological systems. *Environ Health Perspect* 9:335-338, 1974.
 26. Langer AM: The subject of continuous vigilance. *Environ Health Perspect* 9:53-56, 1974.
 27. Rohl AN, Langer AM: Identification of asbestos in talc. *Environ Health Perspect* 9:95-109, 1974.
 28. Langer AM, Mackler AD, Pooley FD: Electron microscopical investigation of asbestos fibers. *Environ Health Perspect* 9:63-80, 1974.
 29. Miller A, Langer AM, Teirstein, AS, Selikoff IJ: "Non-specific" interstitial fibrosis: association with fibers detected by electron microscopy. *N Engl J Med* 292:91-93, 1975.
 30. Rohl AN, Langer AM, Selikoff IJ, Nicholson WJ: Exposure to asbestos in use of consumer spackling, patching, and taping compounds. *Science* 189(4204):551-553, 1975.
 31. Rohl AN, Langer AM, Klimentidis R, Wolff MS: Asbestos exposure during brake lining maintenance and repair. *Environ Res* 12:110-128, 1976.
- Rohl AN, Langer AM, Selikoff IJ, Tordini A, Klimentidis R, Bowes DR, Skinner D: Mineral and chemical characterization of selected consumer talcum products. *J Toxicol Environ Sci* 2:255-284, 1976.
33. Bowes DR, Langer AM, Rohl AN: Nature and range of mineral dusts in the environment. *Phil Trans Roy Soc London* 286:593-610, 1977.

34. Rohl AN, Langer AM, Klimentidis R, Wolff MS, Selikoff IJ: Asbestos content of dust encountered during brake maintenance and repair. *Proc Roy Soc Med* 70:32-39, 1977.
35. Rohl AN, Langer AM, Selikoff IJ: Environmental asbestos pollution related to use of quarried serpentine rock. *Science* 196:1319-1322, 1977.
36. Langer AM, Wolff MS, Rohl AN, Selikoff IJ: Variation of properties of chrysotile asbestos, subjected to prolonged milling. *J Toxicol Environ Sci* 4:173-188, 1978.
37. Fischbein A, Langer AM, Suzuki Y, Selikoff IJ: Carcinoma of the lung in a drywall taping worker: report of a case. *Toxicol Letters* 2:231-236, 1978.
38. Langer AM: Crystal faces and cleavage planes in quartz as templates in biological processes. *Quart Rev Biophys* 11:543-575, 1978.
39. Rohl AN, Langer AM, Selikoff IJ: Airborne asbestos in the vicinity of a freeway: discussion. *Atmosph Environ* 12:2030-2031, 1978.
40. Langer AM, Rohl AN, Selikoff IJ: Asbestos on Maryland's roads. *The Lancet* i:1263-1264, 1978.
41. Fischbein A, Rohl AN, Langer AM, Selikoff IJ: Drywall construction and asbestos exposure. *Am Industr Hyg Assoc* 40:402-407, 1979.
42. Langer AM, Rohl AN, Selikoff IJ, Harlow G, Prinz M: Asbestos as a co-factor among nickel processing workers. *Science* 209:420-422, 1980.
43. Nolan RP, Langer AM, Harington JS, Oster G, Selikoff IJ: Quartz hemolysis as related to its surface functionalities. *Environ Res* 26:503-520, 1981.
44. Rohl AN, Langer AM, Moncure G, Fischbein AS, Selikoff IJ: Endemic pleural disease associated with mixed fibrous dust exposure in Turkey. *Science* 216(4545):518-520, 1982.
45. Langer AM, McCaughey WET: Mesothelioma in a brake repair worker. *The Lancet* ii:1101-1103, 1982.
46. Ehrenreich T, Espinoza T, Langer AM, Rohl AN, Daum SM: Algorithm for forensic pathological diagnosis of asbestos-related diseases. *Am J Foren Med Pathol* 3(4):315-321, 1982.
47. Langer AM, Rohl AN, Fischbein AS, Selikoff IJ: Cancer in nickel processing workers in New Caledonia: discussion. *Science* 215:425-426, 1982.

48. Yeager H, Russo D, Yanez M, Gerardi D, Nolan RP, Kagan E, Langer AM: Preliminary observations on acute cytotoxicity of short fiber chrysotile asbestos for human alveolar macrophages. *Environ Res* 30:224-232, 1983.
49. Brody J, Miller A, Langer AM: Pneumoconiosis associated with exposure to glass and abrasive fragments. *Am J Industr Med* 6:339-346, 1984.
50. Constantopoulos S, Goudevenos J, Saratzis N, Charalampopoulos C, Laparidou S, Langer AM, Selikoff IJ, Moutsopoulos H: Endemic asbestos-like pleural calcifications in the absence of occupational asbestos exposure. *Arch Hellenic Med* 1(10):165-171, 1984.
51. Sawyer R, Rohl AN, Langer AM: Fiber contamination in buildings resulting from removal of asbestos-containing materials. *Environ Res* 36(1):46-55, 1985.
52. Constantopoulos SH, Goudevenos JA, Saratzis N, Langer AM, Selikoff IJ, Moutsopoulos HM: Metsovo lung: pleural calcification and restrictive lung function in northwestern Greece. Environmental exposure to mineral fiber as etiology. *Environ Res* 38:319-331, 1985.
53. Langer AM, Nolan RP: Asbestos in potable water supplies and attributable risk of gastrointestinal cancer. *Northeast Environ Sci* 5(1/2):41-53, 1986.
54. Langer AM, Nolan RP, Constantopoulos SH, Moutsopoulos HM: Association of Metsovo lung and pleural mesothelioma with exposure to tremolite-containing whitewash. *The Lancet* i:965-967, 1987.
55. Constantopoulos SH, Langer AM, Saratzis N, Nolan RP: Regional findings in Metsovo lung. *The Lancet* ii, 452-453, 1987.
56. Nolan RP, Langer AM, Weisman I, Herson R: Surface character and membralytic properties of the titania polymorphs. *Br J Ind Med* 44(10):687-698, 1987.
57. Nolan RP, Langer AM, Eskenazi RA, Herson GB, Foster KW: Membranolytic activities of quartz standards. *Toxicol In Vitro* 1(4):239-245, 1987.
58. Langer AM, Nolan RP, Constantopoulos SH: Endemic pleural calcification and mesothelioma. *JAMA* 260 (3) 339-340, 1988.
59. Langer AM, Nolan RP: Fiber type and mesothelioma risk. Symposium of Health Aspects of Exposure to Asbestos in Buildings. Energy and Environmental Policy Center, Kennedy School of Government. Harvard University. December, 1989, 91-141.

60. Freed JA, Miller A, Gordon R, Fischbein A, Kleinerman J, Langer AM: Desquamative interstitial pneumonia associated with chrysotile asbestos fibers. *Br J Ind Med*, 48: 332-337, 1991.
61. Nolan RP, Langer AM, Herson GB: Characterization of palygorskite specimens from different geological locales for health hazard evaluation. *Br J Ind Med*, 48: 463-475, 1991.
62. Langer AM, Nolan RP: Chrysotile biopersistence in the lungs of persons in the general population and exposed workers. *Env. Health Perspect. Supplts.*, 102, Suppl. 5, 235-239, 1994.
63. Nolan RP, Langer AM, Addison J: Lung content analysis of cases occupationally exposed to chrysotile asbestos. *Env. Health Perspect. Supplts.*, 102, Suppl. 5, 245-250, 1994.
64. Langer AM, Nolan RP: Chrysotile: Its Occurrence and Properties as variables controlling Biological Effects. *Ann. Occup. Hyg.*, 38, No. 4, 427-451. 1994.
65. Wilson R, Langer AM, Nolan RP, Gee JBL, Ross M: Asbestos in New York City public school buildings. Public Policy: Is there a scientific basis? *Jour. Regulatory Toxicology and Pharmacology*, 20, 161-169, 1994.
66. Langer AM, Nolan RP: Physical chemical properties to fibers other than asbestos in global use. *J. Occup. Health and Safety. Aust and New Zeal.*, 12, No. 3, 263-278, 1996.
67. Langer AM, Nolan RP: Asbestos in the lungs of persons exposed in the United States. *Monaldi Arch Ches Dis*, 53, No.2, 168-180. 1998.
68. Langer AM, Health experience of some U.S. and Canadian workers exposed to asbestos. *Foundation for risk assessment Canadian Mineralogist, Special Volume*, 1-12, 2000, (in press).
69. Nolan RP, Langer AM, Wilson RP: A risk assessment for exposure to grunerite asbestos (amosite) in an iron ore mine. *Proc. Natl. Acad. Scis.* 96, 3412-3419, 1999.
70. Wilson R, Langer AM, Nolan RP: A risk assessment for exposure to glass wool. *Regulatory Toxicol. and Pharmacol.* 30 (2): 96-109, 1999.
71. Nolan RP, Langer AM: Risk assessment of the influence of chrysotile asbestos on human health. In: *Reports for the International Scientific-Practical Conference on the Safe Usage of Chrysotile Asbestos*. 42-49. Ivano-Frankovsk, Ukraine. 1999.

72. Nolan RP, Langer AM: Asbestos air concentrations and fiber type in buildings. In: Contribution of Science to Risk-Management Decisions. Canadian Mineralogist, Special Volume, 2000 (in press).
73. Nolan RP, Langer AM, Ross M, Wicks FJ: Health effects of chrysotile asbestos: In: Contribution of Science to Risk Management Decisions. Canadian Mineralogist, Special Volume, 2000 (in press).
74. Langer AM: The carcinogenicity of chrysotile asbestos. Is the evidence sufficient for a global ban? Columns. Asbestos. Raising the Bar in Asbestos Litigation. 2001 (in press).

PUBLICATIONS IN SYMPOSIA PROCEEDINGS:

1. Berkley C, Langer AM, Sastre A, Arneson A: Electron microprobe analysis of asbestos bodies. In: Int'l Konferenz über die Biologischen Wirkungen des Asbestos, Dresden, 22-24 April, 1968. Holstein, Anspach M (eds), Deutsches Zentralinstitut für Arbeitsmedizin, Berlin, DDR, 12-22, 1968.
2. Schwartz J, Langer AM: Technique of removal and analysis of single fibrous particles from human lung tissue. In: Int'l Konferenz über die Biologischen Wirkungen des Asbestos, Dresden, 22-24 April, 1968. Holstein, Anspach M (eds), Deutsches Zentralinstitut für Arbeitsmedizin, Berlin, DDR, 8-12, 1968.
3. Bowes DR, Langer AM: Polyphase deformation in the schist of the Bronx, New York City. In: Geology, Queens College, CUNY, Alexandroff E (ed) 1(3):17-32, 1969.
4. Langer AM: Electron microprobe analysis (study of asbestos fibers and bodies from lung tissue). In: Laboratory Diagnosis of Diseases Caused by Toxic Agents. Sunderman FW, Sunderman Jr FW (eds), W.H. Green; St. Louis, MO, Chapt. 14, 126-136, 1970.
5. Langer AM, Rubin IB, Selikoff IJ: Electron microprobe analysis of asbestos bodies. In: Pneumonconiosis, Proc Int'l Conf, Johannesburg. Shaprio HA (ed), Oxford University Press; Capetown, 57-69, 1970.
6. Langer AM, Baden V, Hammond EC, Selikoff IJ: Inorganic fibers, including chrysotile in the lungs at autopsy: preliminary report. In: Inhaled Particles III, Proc Conf Brit Occup Hyg Soc, London. Walton WH (ed), Unwin Bros; Surrey, England, 2:683-694, 1971.
7. Langer AM, Selikoff IJ: Chrysotile asbestos of lungs in residents of New York City. In: 2nd Int'l Clean Air Congress, Washington, DC. Englund HM, Beery, WT

(eds), Academic Press; New York, 161-165, 1971.

8. Langer AM, Pooley FD: Identification of single asbestos fibers in human tissues. In: Proc Int'l Agency for Research on Cancer, Biol. Effects of Asbestos, Lyon, 1972, Bogovski P, Gilson JC, Timbrell V, Wagner JC (eds), 119-125, 1973.
9. Langer AM: Aspects of mineralogy of talc. In: Proc Symp on Talc, Washington, DC, May 9, 1973. Goodwin A (ed), USBM IC 8639, US Department of Interior, 82-88, 1974.
10. Pooley FD, Rohl AN, Langer AM, Bowes DE, Skinner DL: Mineralogy and chemistry of British talc and consumer talcum products. In: 4th Int'l Symp Inhaled Particles and Vapors. Walton WH (ed), Pr. 8.6, 1-18, 1975.
11. Langer AM, Rohl AN, Wolff MS, Klimentidis R, Shirey SB: Review of current techniques for the analysis of fibers in talc. In: Electron Microscopy of Microfibers. Asher IM, McGrath PP (eds), US Government Printing Office, 28-33, 1977.
12. Langer AM, Wolff MS: Asbestos carcinogenesis. In: Inorganic and Nutritional Aspects of Cancer. Adv Exper Med Biol Series, Schrauzer GN (ed), Plenum Press; New York, 29-55, 1977.
13. Nicholson WJ, Langer AM, Selikoff IJ: Epidemiological evidence on asbestos, Part I: Human health effects; Part II: Extrapolation to other inorganic fibers. In: Proc of Workshop on Asbestos, NBS SP 506. Gravatt CC, LaFleur PD, Heinrich KFJ (eds), with discussion. US Government Printing Office, Washington, DC, 71-93, 1978.
14. Langer AM: Relationship between chemical and physical properties of mineral fiber and health effects. Proc of Workshop on Asbestos. NBS SP 506. Gravatt CC, LaFleur PD, Heinrich KFJ (eds). 194-195, 198, 1978.
15. Rohl AN, Langer AM: Fibrous mineral content of consumer talc-containing products. In: Dusts and Diseases. Lemen R, Dement JM (eds), Pathotoxical Publishers, Inc; Forest Park, IL, 393-403, 1979.
16. Langer AM, Rohl AN, Wolff MS, Selikoff IJ: Asbestos, fibrous minerals, and acicular cleavage fragments: nomenclature and biological properties. In: Dusts and Diseases. Lemen R, Dement JM (eds), Pathotoxical Publishers, Inc; Forest Park, IL, 1-22, 1979.

17. Langer AM, Maggiore CJ, Nicholson WJ, Rohl AN, Rubin IB, Selikoff IJ: The contamination of Lake Superior with fibrous amphiboles. In: Proc NY Acad Sci Asbestos Conf, New York, NY, June 1978, Ann NY Acad Sci 330:549-572, 1979.
18. Langer AM: Significance of aspect ratio in regulation of asbestos fiber exposure. Ann NY Acad Sci 330:601-604, 1979.
19. Langer AM, Selikoff IJ, Rosenberg C: Defining new asbestos high-risk groups. In: Int'l Conf Critical Current Issues in Environmental Health Hazards, Tel Aviv, Israel, March 4-7, 11, 1979.
20. Langer AM, Sebastien P: Physical-chemical properties of fibers: discussion. In: Biological Effects of Asbestos, IARC, Vol. 1, Wagner JC (ed), WHO, Lyon, France, 143-145, 1980.
21. Suzuki Y, Rohl AN, Langer AM, Selikoff IJ: Mesothelioma following intraperitoneal administration of zeolite. Fed Proc 39(3):640, 1980.
22. Langer AM: Natural non-fibrous asbestos substitutes: Talc. In: Proc Nat'l Workshop on Substitutes for Asbestos, Guimond RJ, Rowe J (eds), US Environmental Protection Agency, Office of Pesticides and Toxic Substances, Washington, DC, 563-569, 1980.
23. Langer AM: Mineralogy and physical properties of fibers. Talcs contaminated with other minerals. Discussions. In Dusts and Disease. Lemen R, Dement J (eds). Pathotox Pub Inc., Park Forest, IL. 120; 122-123; 129; 213-214; 265; 341-344; 348; 354; 414-415. 1979.
24. Rohl AN, Ehrenreich T, Langer AM: Characterization and identification of asbestos materials in human tissues. In: Adv Pathol (Anat and Clin), Vol. 2, Anatomic Pathology, Cytopathology, Forensic Pathology and Toxicology, Levy E (ed), Pergamon Press, New York, 523-525, 1982.
25. Langer AM, Weisman I, Adams A: Characterization of crystalline particles in human tissues by analytical electron microscopy. J Rheumatol 8(6):1018-1019, 1982.
26. Nolan RP, Langer AM: Quartz and hemolysis: physico-chemical factors controlling membrane activity. In: 4th Ann RMCOEH Conf Health Issues Related to Mining and Minerals, Wagner W, Merchant J, Rom W (eds), Chapt. 4, Ann Arbor Press, Michigan, 63-81, 1983.
27. Langer AM: Surface characteristics and biological properties of minerals. In: World Symp on Asbestos, May 25-27, 1982, Canadian Asbestos Information

Center, Montreal, Quebec, 393-400, 1983.

28. Langer AM, Nolan RP: Minerals, rocks and ore bodies: sources of agents of human disease. In: Proc 2nd Int'l Congr on Applied Mineralogy in the Minerals Industry. Park WC, Hausen DM, Hagni RP (eds), 1159-1179, 1985.
29. Harlow GE, Kimball MR, Dowty E, Langer AM: Observations on amosite-grunerite dusts. In: Proc 2nd Int'l Congr on Applied Mineralogy in the Minerals Industry. Park WC, Hausen DM, Hagni RP (eds), 1147-1157, 1985.
30. Nolan RP, Langer AM, Foster KW: Particle size and chemically induced variability in the membralytic activity of quartz: preliminary observations. In: In Vitro Effects of Mineral Dusts, 3rd Int'l Workshop. Beck EG, Bignon J (eds), Springer-Verlag, Berlin, 39-50, 1985.
31. Langer AM, Nolan RP: Physico-chemical properties of minerals relevant to biological activities. State of the Art. In: In Vitro Effects of Mineral Dusts, 3rd Int'l Workshop. Beck EG, Bignon J (eds), Springer-Verlag, Berlin, 9-24, 1985.
32. Langer AM, Nolan RP: Physico-chemical properties of quartz and biological activity. In: Silica, Silicosis, and Cancer. Controversy in Occupational Medicine. Ca Res Monogr 2, Goldsmith DF, Winn DM, Shy CM (eds), Praeger, NY, 125-136, 1986.
33. Langer AM, Nolan RP: The properties of chrysotile asbestos as determinants of biological activity. Variations in cohort experience and disease spectra as related to mineral properties. In: General Motors Workshop. Biol Effects Chrysotile Asbestos, Cardiff, 7-9 May, 1986, Wagner JC (ed), Accomplishments in Oncology, Lippincott Press, 1(2):30-51, 1986.
34. Langer AM: Fibers in friction products. Discussion and Summary of Symposium. In: Proc Fibres in Friction Materials Symposium. The Asbestos Institute, Montreal, Canada, 67-74, October, 1987.
35. Nolan RP, Langer AM: Quantitative aspects of fiber morphology. In: Proc Fibres in Friction Materials Symposium. The Asbestos Institute, Montreal, Canada, 75-97, October, 1987.
36. Langer AM, Nolan RP: Fiber type and burden found in parenchymal tissues of workers occupationally exposed to asbestos in the United States. In: Mineral Fibers in the Non-Occupational Environment, Spec. Publ. 90. IARC-WHO, Lyon, France, 310-315, 1989.
37. Langer AM, Nolan RP, Bowes DR, Shirey SB: Inorganic particles found in

- cigarette tobacco, cigarette ash, and cigarette smoke. In: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. Wehner AP, Felton DL, Eds., Battelle Press, Columbus, OH, 421-439, 1989.
38. Nolan RP, Langer AM, Herson GB: Physico-chemical properties and membranolytic activities of the titanium dioxide polymorphs compared to quartz. In: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. Wehner AP, Felton DL, Eds., Battelle Press, Columbus, OH, 391-419, 1989.
 39. Langer AM, Nolan RP: Mineral fibers in lung tissues of persons exposed to asbestos in the United States. In: VIIth Int'l Pneumoconiosis Conf. August 23-26, 1988.
 40. Nolan RP, Langer AM: Physicochemical characteristics of quartz dust which controls its biological activity. In: VIIth Int'l Pneumoconiosis Conf. August 23-26, 1988.
 41. Langer AM, Nolan RP: Distinguishing asbestiform tremolite from non-asbestiform tremolite. In: VIIth Int'l Pneumoconiosis Conf. August 23-26, 1988.
 42. Nolan RP, Langer AM, Herson GB: Membranolytic activity of palygorskite and sepiolite. In: IVth Int'l Workshop: Effects of Mineral Dusts on Cells. Mossman BT, Begin RO, Eds., Springer-Verlag, Orford, Quebec, Canada, September, 37-48, 1989.
 43. Langer AM: Chairman's Summary and Discussion. In: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. Whener AP, Felton DL (eds). Battelle Press, Columbus, Ohio. 590-593, 1989.
 44. Langer AM, Nolan RP, Pooley FD,: Phyllosilicates: associated fibrous minerals. In: Health Related Effects of Phyllosilicates. J. Bignon, Ed., 59-74, Springer-Verlag, N.Y., 1990.
 45. Langer AM, Nolan RP, Addison J: Physico-chemical properties of asbestos as determinants of biological potential. In: Mineral Fibers and Health. Liddell FDS, Miller K, Eds., CRC Press, Ann Arbor, Michigan, 207-224, 1991.
 46. Langer AM, Nolan RP, Addison J: Distinguishing between amphibole asbestos fibers and elongate cleavage fragments of their non-asbestos analogues. In: NATO Advanced Research Workshop on Mechanisms in Fibre Carcinogenesis. RC. Brown, J. Hoskins, N. Johnson, Eds., Albuquerque, New Mexico, October 22-25, 1990. 253-267. 1991.
 47. Nolan RP, Langer AM, Oechsle GW, Addison J, Colflesh DE: Association of tremolite habit with biological potential. In: NATO Advanced Research Workshop

- on Mechanisms in Fibre Carcinogenesis. RC. Brown, J. Hoskins, N. Johnson, Eds., Albuquerque, New Mexico, October 22-25, 1990. 231-251. 1991.
48. Langer AM, Nolan RP: Zeolite catalysts. Is there a health risk? The erionite experience and its application to other zeolites. In: Chemicals and the Environment. Symposium on Chemical Specialties USA, Philadelphia. Spring Innovations, Ltd. 91-95, 1992.
 49. Nolan RP, Langer AM: Limitations of the Stanton Hypothesis. Chapt. 9. Health Effects of Mineral Dusts, Reviews in Mineralogy, 28, Guthrie GD., Jr. and Mossman BT, Eds, Mineral. Soc. America, Wash., D.C., 309-326, 1993.
 50. Ross M, Nolan RP, Langer AM, Cooper WC: Health effects of mineral dusts other than asbestos. Chap. 12. Health Effects of Mineral Dusts, Reviews in Mineralogy, 28, Guthrie GD., Jr. and Mossman BT, Eds, Wash., D.C., 361-407, 1993.
 51. Langer AM, Nolan RP: Factors controlling the biological potential of inorganic dusts. Surface chemistry and character. In: Toxic and Carcinogenic Effects of Solid Particles in the Respiratory Tract, Mohr U, Dungworth DL, Mauderly JL, Oberdorster G, Eds., ILSI Monographs, ILSI Press, Wash. D.C., 147-157, 1994.
 52. Nolan RP, Langer AM: Physico-chemical properties of inorganic particles controlling biological activity. In: Carcinogenicity of Inorganic Substances. Risk From Occupational Exposure, J. H. Duffus, Ed., Roy. Soc. Chemistry. Bookcraft Ltd., G. B., 39-57, 1997.
 53. Langer AM, Park MV: Party 1 Report: Physico-chemical characterization of exposures. In: Carcinogenicity of Inorganic Substances. Risks From Occupational Exposure. JH Duffus (ed). Roy Soc Chemistry, Bookcraft Ltd., U.K., 246-249, 1997.
 54. Langer AM: The mineralogy of asbestos fibers in relation to causation. In: Asbestos Medicine. Proceedings of the Conference. Defense Research Institute, Las Vegas, NV. 205-218, 1999.
 55. Langer AM: A look at the mineralogy of asbestos. In: Essential Skills in Asbestos Litigation. Andrews Publications. Washington DC. Nov 30-Dec 1, 2000.

LETTERS TO THE EDITOR:

Miller A, Teirstein AS, Langer AM, Selikoff IJ: Submicroscopical asbestos fibers and disease. N Engl J Med 292:1195-1196, 1975.

2. Wolff MS, Langer AM, Shirey SB: Gas chromatographs: health effects. Science

- 191:13, 1976.
3. Rom WN, Langer AM: Carcinogenicity of fibrous glass. *West J Med* 126:413, 1977.
4. Rohl AN, Langer AM, Selikoff IJ: Asbestos pollution. *Science* 197:716-718, 1977.
5. Rohl AN, Langer AM, Selikoff IJ: Chrysotile asbestos, effects of human exposure. *Science* 198:1202, 1977.
6. Fischbein AS, Rohl AN, Langer AM, Selikoff IJ: Pleura-and-peritoneal mesothelioma. *Med Klin* 74(19):742, 1979.
7. Fischbein AS, Langer AM, Rohl AN, Selikoff IJ: Asbestos disease in drywall construction workers. *Am Industr Hyg Assoc* 40(9):829-830, 1980.
8. Fischbein AS, Rohl AN, Langer AM, Selikoff IJ: Past asbestos exposure among cable splicers. *Am J Pub Health* 71:1277-1278, 1981.
9. Langer AM, Selikoff IJ: Scientific data on chrysotile. *Chem Engineer News* 2:59, 1984.
10. Fischbein AS, Langer AM, Rohl AN: Asbestos-associated diseases: lessons from the past for the future. *JAMA* 254:1309-1310, 1985.
11. Langer AM, Nolan RP: Asbestos in play sand. *N Engl J Med* 316:882, 1987.
12. Langer AM, Nolan RP, Ross M: Asbestos policy. *Science*, 249:1485, 1990.
13. Langer AM, Nolan RP: Pleural mesothelioma resulting from exposure to amosite asbestos in a building. *Respiratory Medicine* 84:509-510, 1990.
14. Langer AM, Nolan RP, Addison J: On talc, tremolite and tergiversation. *British Journal Industrial Medicine* 48:359-360, 1991.
15. Langer AM, Nolan RP: The amphibole hypothesis: Neither gone nor forgotten. *Am. J. Pub. Health*, 87(4) 688-689: 1997.
16. Langer AM, Nolan RP: Asbestos disease in foundrymen: *J. Occup. Env. Med.*, 39, 699-700. 1997.
17. Langer AM, Non-occupational exposure to chrysotile asbestos and the risk of lung cancer. *New Engl J Med*. 1998, 339, No.14, 1000-1001.

OTHER PUBLICATIONS: —

1. Langer AM, Mackler AD: Mineral particles and human disease. In: Encyclopedia of Geochemistry and Environmental Sciences. Fairbridge RW (ed), Van Nostrand; Reinhold, NY, Vol. IVA, pp. 730-739, 1972.
2. Langer AM, Pooley FD: Mineralogy of asbestos minerals and methods of their characterization in human tissues. In: Asbestos: Volume 14 in the Chemical Carcinogenesis Series, Int'l Agency for Research on Cancer, p. 107, 1977.
3. Langer AM, Holaday D, Nicholson WJ, Rohl AN: Chapter 2. Asbestos Minerals: Nature, Occurrence and Properties, pp. 34-50. Chapter 4. Identification and Quantitation of Asbestos Fibers, pp. 71-100. Chapter 5. Environmental Distribution, pp. 102-134. In: Asbestos and Disease. Selikoff IJ, Lee WHK (eds), Academic Press; NY, 1978.
4. Langer AM: Mineralogical factors in asbestos health effects. NSB SP506, Workshop on Asbestos: Definitions and Measurement Methods. Gravatt CC, LaFleur PD, Heinrich KFJ (eds), pp. 91-92; 198, 1978.
5. Rohl AN, Langer AM, Wylie AG: Mineral characterization of asbestos-containing spray finishes. In: Asbestos-Containing Materials in School Buildings. US Environmental Protection Agency, Document EPA 450-2-78-014, US Government Printing Office; Washington, DC, pp. 59-64, 1979.
6. Langer AM: Electron microscopy and x-ray applications to environmental and occupational health analysis. Book Review. J Toxicol Environ Health, 1979.
7. Langer AM: Round-table discussion on talc as an asbestos substitute. Chairman's remarks. In: Proc Nat'l Workshop on Substitutes for Asbestos, Arlington, VA, Guimond RJ, Rowe JN, Levin A, Pillsbury H (eds), USEPA Office Toxic Substances, Washington DC, pp. 612-619, July 14-16, 1980.
8. Langer AM: Mineralogy of dust diseases. In: Maxcy-Rosenau Public Health and Preventive Medicine. Last J (ed), Appleton-Century-Crofts Publishers; NY, 11th Edition, pp. 637-641, 1981.
9. Langer AM: Host rocks and gangue materials in relation to pneumoconiosis and cancer. Editorial. Am J Industr Med 2:89-90, 1981.
10. Langer AM, Sebastien P: Physical-chemical properties of fibers. Rappateur Report. In: Biological Effects of Mineral Fibers, Int'l Agency for Research on Cancer, Wagner JC (ed), IARC-WHO, Lyon, France, 1:143-145, 1981.

11. Zoltai T, Langer AM: Chapter 2. Asbestiform fibers: historical background, terminology, and physicochemical properties. In: Asbestiform Fibers - Non-Occupational Health Risks. NAS-NRC, Nat'l Acad Sci, pp. 25-47, 1984.
12. Lynch J, Langer AM: Chapter 4. Measurement of exposure to asbestiform fibers. In: Asbestiform Fibers - Non-Occupational Health Risks. NAS-NRC, Nat'l Acad Sci, pp. 82-96, 1984.
13. Langer AM: Mineral dust and pulmonary lesions: etiological link or epiphenomenon? Editorial. Am J Industr Med 6:169-171, 1984.
14. Langer AM, et al.: Asbestos and other natural mineral fibers. In: Int'l Program on Chemical Safety. Environ Health Criteria 53, Chapters II, III, IV, V, WHO, Geneva, 1986.
15. Langer AM: Mineralogy. Chapter II. Presidential Report on Occupational Chest Diseases, Vol. 1, Characterization and Measurement of the Environment. Merchant J, Dement J (eds), ALOSH-NIOSH-CDC; Washington, DC, pp. 3-40, 1987.
16. Langer AM: Asbestos. In: Collier's Encyclopedia, 3:4-5, 1987.
17. Langer AM: Chairman's Summary and Discussion. In: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. Wehner AP, Felton DL, Eds., Battelle Press, Columbus, OH, pp. 590-593, 1989.
18. Langer AM: Asbestos. In: Merit Students Encyclopedia, Macmillan Ed Pub, NY, pp. 270-271, 1990.
19. Langer AM: Chrysotile: The mineral and its properties. Summary of Presentation In: Health Risks Associated with Chrysotile Asbestos. Ann. Occup. Hyg., 38, 407. 1994.
20. Nolan RP, Langer AM: Mineralogy. Chapter 12. In: Occupational and Environmental Respiratory Disease, Harber P., Schenker M., Balmes J., Eds., Mosby Press, N.Y., 173-187, 1996.
21. Langer AM: The aluminum reclamation industry work environment: Are unidentified neurotoxins present? Editorial. 1998. Arch. Environ. Health, 53, No.5, 311-312.

PUBLISHED ABSTRACTS:

1. Berkley C, Langer AM, Berkley LE, Anderson CA: Chemical changes in inspired asbestos fibers. Microscopy Symp, McCrone Laboratory, Chicago, IL, August,

1966.

2. Berkley C, Langer AM, Selikoff IJ: Microbeam analysis and identification of the degradation products of inspired pulmonary particulates. Trans NY Acad Sci, May, 1967.
3. Langer AM, Kerr PF: The nature of soft and harsh chrysotile. In: Conference on the Physics and Chemistry of Asbestos Minerals, Oxford, Pr. 2-2, July, 1967.
4. Berkley C, Langer AM, Arneson A: Electron microprobe and electron diffraction analysis of asbestos bodies. In: 2nd Intl. Conf. Biol. Effects Asbestos, p. 7, Dresden, 22-25 April, 1968.
5. Berkley C, Langer AM, Rubin IB: Electron Microprobe analysis of particles in tissues. In: Proc 5th Nat'l Conf Elect Probe Soc Am, New York, Pr. 29A-29B, July, 1970.
6. Selikoff IJ, Nicholson WJ, Langer AM: Asbestos air pollution in urban areas. In: Proc AMA Air Pollution Med Res Conf, New Orleans, October, 1970.
7. Ehrenreich T, Langer AM, Selikoff IJ: Asbestos fibers in human lungs: forensic significance in environmental disease. In: 6th Int'l Mtg Forensic Sci, Edinburgh, Int'l Assn Forensic Sci, p. 86, September, 1972.
8. Teirstein AS, Miller A, Langer AM, Selikoff IJ: Sublight microscopic mineral particles in the etiology of pulmonary fibrosis. In: Proc Am Thorac Soc, New York, pp. 33-34, May 21-21, 1973.
9. Everett GA, Langer AM: Environmental contamination of Lake Superior asbestos from amphiboles in taconite wastes. In: Proc Ann Mtg Geol Soc Am, Miami, p. 728, November 18-20, 1974.
10. Rohl AN, Anderson H, Langer AM: Asbestos exposure during brake lining maintenance and repair. In: Proc Am Ind Hyg Assn, Miami, May 12-16, 1974.
11. Langer AM, Pooley FD, Bowes DR: Environment, disease and minerals. Read before the Geological Society, London, November 20, J Geol Soc, with discussion, 1974.
12. Langer AM, Wolff MS, Rubin IB: Environmental assay: particles in human tissues. In: Proc Int'l Conf Environ Sensing and assessment, Environmental Protection Agency, Pr. 29-34, September 14-19, 1975.
13. Bowes DR, Langer AM, Rohl AN: Nature and range of mineral dusts in the environment. Roy Soc London (Geological), p. 18, April 7, 1976.

14. Langer AM, Suzuki Y, Rohl AN: Identification of Microparticles. In: 3rd Intl. Symp. on Detection and Prevention of Cancer. ACS. New York, p. 91, April 26-May 1, 1976.
15. Fischbein A, Langer AM, Suzuki Y, Selikoff IJ: Carcinoma of the lung in a drywall taping worker: report of a case. In: Prog Abstr 3rd Int'l Symp Detect Prevent Cancer, No. 280, September 7, 1976.
16. Rom WN, Frank A, Suzuki Y, Langer AM, Selikoff IJ: Rapidly progressive interstitial pulmonary fibrosis from short term mixed dust exposure. 42nd An Sci Assem Am Coll Chest Phys, Atlanta, GA, October 21-28, 1976.
17. Fischbein A, Langer AM: Shale oil: A future energy alternative. A review of the mineralogic and carcinogenic properties of shale oil. Tenth Ann Conf Trace Substances in Environ Health, Columbia, MO, June 8-10, 1976.
18. Langer AM: Identification of microparticles in tissues. Workshop 13, 3rd Int'l Symp on Detection and Prevention of Cancer, September 1976.
19. Langer AM, Wolff MS: Asbestos carcinogenesis. In: Inorganic and Nutritional Aspects of Cancer, La Jolla, CA, January 2-5, 1977.
20. Selikoff IJ, Nicholson WJ, Langer AM: Epidemiological evidence on asbestos. Workshop on Asbestos, Definition and Measurement Methods, NBS Workshop, Gaithersburg, MD, July, 1977.
21. Langer AM: Contamination by submicroscopic particles in the biosphere. Int'l Symp Anal Electron Microscopy in Biol and Environ Routine and Research Work, Nat'l Inst Pub Health, Oslo, May 10, 1977.
22. Langer AM: Asbestos minerals and their carcinogenic effect. Int'l Symp Anal Electron in Biol and Environ Routine and Research Work, Nat'l Inst Pub Health, Oslo, May 10, 1977.
23. Langer AM, Oster G: Crystal faces and cleavage planes in quartz as templates in biological processes. Biophys Soc Am Phys Soc Mtg, Washington, DC, March, 1978.
24. Lilis R, Langer AM: Chronic interstitial pulmonary disease with severe respiratory disfunction due to unsuspected occupational beryllium exposure. In: XIXth Int'l Congr Occup Health, Dubrovnik, Yugoslavia, pp. 89-90, September 25-30, 1978.
25. Rohl AN, Langer AM: Asbestos and asbestiform minerals in non-asbestos mines in the United States. In: XIXth Int'l Congr Occup Health, Dubrovnik, Yugoslavia,

pp. 121-122, September 25-30, 1978.

26. Russo DA, Kagan E, Langer AM, Yeager H: Human alveolar macrophages: cytotoxicity of naturally-occurring short fiber asbestos. Federation Proceedings, Section Physiology, Federation American Societies of Experimental Biology, 40 (3), 679, 1981.
27. Langer AM: Physical-chemical characteristics of chrysotile and their relationship to biological activity. In: 29th Ann Clay Minerals Conf, Baylor, Waco, TX, p. 58, October 5-9, 1980.
28. Bowes DR, Langer AM: Mineralogy and geochemistry of particulates in cigarette smoke. In: Ann Mtg Geol Soc, London, Environmental Mineralogy, January 11, 1980.
29. Langer AM: Particulate inhalants. In: Occupational Toxicology, College of Medicine and Dentistry, NJ, September 26, 1980.
30. Langer AM: Minerals as toxic agents: parameters and mechanisms. In: Proc 50th Geol Alumni Assn, Brooklyn College, CUNY, May 7-9, 1981.
31. Langer AM, Weisman, I, Adams A, Pooley FD: Characterization of crystalline particles in tissue by analytical electron microscopy. In: Symp on Crystalline Deposits in Tissues, Toronto, August 13-14, 1981.
32. Russo DA, Kagan E, Langer AM, Nolan R, Yeager H: Cytotoxicity of naturally-occurring short fiber asbestos. In: 20th Int'l Congr Occup Health, Cairo, September 25-October 1, 1981.
33. Ehrenreich T, Langer AM, Selikoff IJ: Algorithm of pathologic diagnosis of asbestos-related diseases for forensic purposes. Significance of quantitative and morphological correlates. In: 20th Int'l Congr Occup Health, Cairo, September 25-October 1, 1981.
34. Rohl AN, Langer AM, Suzuki Y, Lili R, Moncure G, Selikoff IJ: Endemic pleural disease associated with mixed fibrous dust exposure in Turkey. In: 20th Int'l Congr Occup Health, Cairo, September 25-October 1, 1981.
35. Nolan RP, Langer AM: Surface functionalities of quartz and hemolytic activity. In: Proc 2nd Int'l Workshop of the In Vitro Effects of Mineral Dusts, Arkadelphia, AR, April 5-6, 1982.
36. Langer AM, Nolan RP: Membrolytic properties of quartz. In: Proc 2nd Ann Geol Alumni Assn, Brooklyn College, CUNY, p. 4, April 28-30, 1983 (abstracts).

37. Nolan RP, Langer AM, Foster KW: Recognition of quartz by erythrocyte membranes. In: 6th Int'l Penumoconiosis Conf, Bochum, FDR, September 20-23, 1983 (Abstract 198).
38. Nolan RP, Langer AM, Foster KW: Physico-chemical factors effecting membrolytic properties of quartz. In: 6th Int'l Pneumoconiosis Conf, Bochum, FDR, September 20-23, 1983 (Abstract 199).
39. Langer AM, Nolan RP: Surface properties of quartz and membrane activity. In: Int'l Symp Silica, Silicosis and Cancer, Chapel Hill, NC, April 3-5, 1984.
40. Langer AM: Asbestos, fibrous minerals, acicular cleavage fragments and the mineral industries. In: Int'l Congr Applied Mineralogy, Los Angeles, February, 1984.
41. Langer AM: Minerals and disease: the association between exposure to minerals and rock dust and the occurrence of human disease. In: Int'l Congr Applied Mineralogy, Los Angeles, February, 1984.
42. Langer AM: Mineral fiber in water? In Medical Geology Conference on Health Threatening Toxins in Water, Brooklyn College, NY, May, 1984.
43. Constantopoulos SH, Langer AM, Saratzis N, Goudevenos JA, Selikoff IJ: Metsovo lung: pleural calcifications and malignant pleural mesothelioma in northwestern Greece. Tremolite asbestos used for whitewashing as etiology. In: 3rd Int'l Conf Environmental Lung Disease, Am Coll Chest Phys, Montreal, Canada, October 15-18, 1986. Chest 91(2):300, 1987.
44. Langer AM, Nolan RP: Fiber type and parenchymal burden found in workers occupationally exposed to asbestos fiber in the United States. Implications for risk assessment in the general population. Mineral Fiber in the Non-Occupational Environment, Lyon, France, October 8-10, 1987.
45. Langer AM, Nolan RP: Mineralogical and biological comparison of asbestiform and non-asbestiform tremolite. AIME Annual Meeting, Phoenix, AZ, January 25-28, 1988.
46. Langer AM, Nolan RP, Bowes DR, Shirey S: Inorganic particles in cigarettes and cigarette smoke. In: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. International Symposium/Workshop, Seattle, WA, April 10-14, 1988.
47. Nolan RP, Langer AM, Herson GB: Physico-chemical properties of the titanium dioxide polymorphs and biological activity. In: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. International

Symposium/Workshop, Seattle, WA, April 10-14, 1988.

48. Nolan RP, Langer AM, Herson GB: Membranolytic activity of palygorskite and sepiolite. In: IVth International Conference on the Effects of Mineral Dusts on Cells, p. 15, Oxford, Quebec, Canada, 1988.
49. Langer AM, Nolan RP, Herson GB: Membranolytic activity and physicochemical characterization of phosphorylated Canadian chrysotile. In: IVth International Conference on the Effects of Mineral Dusts on Cells, p. 14, Oxford, Quebec, Canada, 1988.
50. Nolan RP, Langer AM, Herson GB: Physicochemical characteristics of quartz dust which controls its biological activity. In: VIIth International Pneumoconiosis Conference, DHHS (NIOSH) Publication No. 90-108, Part I, 754, 1990.
51. Langer AM, Nolan RP: Fiber type and risk of mesothelioma to building occupants. In: Health Aspects of Exposure to Asbestos in Buildings. Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, Cambridge, MA, December 14-16, 1988.
52. Langer AM, Pooley FD, Nolan RP: Phyllosilicates: Associated fibrous minerals. In: First International Conference on Health Related Effects of Phyllosilicates. NATO Advanced Research Workshop, Paris, France, March 16-18, 1989.
53. Nolan RP, Langer AM, Herson GB: Characterization of palygorskite specimens from different geological locales for health hazard evaluation. In: First International Conference on Health Related Effects of Phyllosilicates. NATO Advanced Research Workshop, Paris, France, March 16-18, 1989.
54. Langer AM, Nolan RP: The importance of mineral subpopulations in biological assays. In: NATO Advanced Research Workshops on Mechanisms in Fibre Carcinogenesis. Albuquerque, New Mexico, October 22-25, 1990. 49-50.
55. Nolan RP, Langer AM, Oechsle GW, Addison J, Colflesh DE: Association of tremolite habit with biological potential. In: NATO Advanced Research Workshops on Mechanisms in Fibre Carcinogenesis. Albuquerque, New Mexico, October 22-25, 1990. 57.
56. Langer AM: Fiber types, fiber sizes, and asbestos diseases. Andrews Communications Seminars. 2nd Asbestos Litigation. The Eye of the Storm. 25-26 February, 1991. Bal Harbour, Florida.
57. Nolan RP, Langer AM, Oechsle GW, Johnson NF: Physicochemical characterization of selected zeolite minerals for health hazard evaluation. In: Intl. Conf. Env. Lung Disease. Montreal, Canada, September 25-28, 1991.

58. Nolan RP and Langer AM: Characterization of fibers for Health Hazard evaluation. Critical Research Needs. Workshop on Chemical and Biological Interactions of Glass. Bethesda, MD, 5-6 Mar, 1992.
 59. Langer AM and Nolan RP (1992). Comparison of lung tissue mineral fibre retention of exposed workers and the general population. In: Biopersistence of respirable synthetic fibres and minerals. 7-9 Sept, 1992. Lyon. p. 26.
 60. Nolan RP, Langer AM, and Addison J (1992). Health hazard evaluation of the lung tremolite fiber content among Canadian chrysotile workers. In: Biopersistence of respirable synthetic fibres and minerals. 7-9 Sept, 1992. Lyon. p. 52.
 61. Langer AM, Nolan RP (1993). Factors controlling the biological potential of inorganic dusts: surface character and chemistry. 4th International Inhalation Symposium, Hannover. Toxic and Carcinogenic Effects of Solid Particles in the Respiratory Tract, 1-5 March, 1993, Hannover. Abst. A-10, p. 48.
 62. Langer AM, Nolan RP (1993). Physico-chemical characteristics of quartz dust which controls its biological activity. Clay Minerals Society Meeting. San Diego, 25-30 Sept, 1993.
 63. Nolan RP, Langer AM (1995). Evaluation of the health hazards of asbestos in a mine. Goldschmidt Symposium, Penn State University, May 24-26, 1995, p. 75.
 64. Langer AM, Nolan RP, Herson GB (1995). Chemically modified chrysotile asbestos: Physical-chemical characterization and membranolytic activity of phosphorylated Canadian chrysotile. Goldschmidt Symposium, Penn State University, May 24-26, 1995, p. 63.
- Langer AM, Nolan RP (1995). Physical chemical properties of fibers other than asbestos used in global commerce. Symposium on the Health Effects of Fibrous Materials used in Industry Excluding Asbestos. Sydney, Australia, October 30-31, 1995, p. 12.
- Nolan RP, Langer AM, Murray R (1996). The exposure response relationship of chrysotile asbestos. Conference on Asbestos and Health, Asbestos City, Russian Federation. June 4-7, 1996.
67. Nolan RP, Langer AM, Murray R, Grinberg LM, Kogan FM, Tregubov ES, Kuschner M (1997). Pulmonary fibrosis and lung content analysis of Russian chrysotile workers. Preliminary results. 6th International Inhalation Symp., "Relationship Between Respiratory Disease and Exposure to Air Pollution." Hannover, February 24-28, 1997.

MAJOR PROJECT REPORTS:

Report to the U.S. Consumer Products Safety Commission: Mineralogical Analysis of Two "Play Sands" For Their Asbestos Contents. Langer AM, Nolan RP. 26 November, 1986. 9p., 4 Tables, 18 plates.

Chrysotile and chrysophosphate. A comparative study of their physicochemical properties and membrane activities. A report to SNA-Chrysophosphate, Canada. Langer AM, Nolan RP, p. 87, June 1, 1987.

3. Report to the U.S. Consumer Product Safety Commission: Mineral Analysis of a Carbonate Play Sand. Langer AM, Nolan RP. July, 1987. 19 p., 3 Tables.

4. Wollastonite in the pulmonary tissues on animals. A report to Northrop Services Industries, National Toxicology Program. Langer AM, Nolan RP, p. 101, June 15, 1989. —

Preparation, examination and characterization of mineral standards by analytical electron microscopy. A report to Battelle Columbus Laboratories, Langer AM, Nolan RP, Pooley FD, Gieseke JA, Fisher G, 61 p., December 12, 1989.

Comparison and evaluation of the analytical capabilities of three U.S. laboratories for submicroscopic particulate analysis. A report to Battelle Columbus Laboratories, Langer AM, Nolan RP, Gieseke JA, Fisher G. February, 1991.

7. Report on the measurement of fiber release from simulated steam-stressed Durabla gaskets (120E, 160E, 190E for 5 hours) for health hazard evaluation. A report to Durabla, Inc., Langer AM, Nolan RP, 21 p., January 31, 1992.

Measurement of fiber release from simulated steam-stressed Durabla gaskets for health hazard evaluation. A report to Durabla, Inc., Langer AM, Nolan RP, (revision 1/31/92 report) 29 p., July 16, 1992.

9. Report on the measurement of fiber release from simulated steam-stressed Durabla gaskets (120EC, 160EC, 190EC for 5 days) for health hazard evaluation. A report to Durabla, Inc., Langer AM, Nolan RP, 23 p., November 6, 1992.

10. Report on the measurement of fiber release from simulated steam-stressed Durabla gaskets (250EC, 30 days) for health hazard evaluation. A report to Durabla, Inc., Langer AM, Nolan RP, 25 p., December 9, 1992.

11. The Identification and Quantitation of Small Asbestos Fibres in Injectable Medicines. Technical Expert Report Prepared for Hoffman-LaRoche, Basel. 16 p. Addison J, Burdett GJ, Langer AM, Muhle H. 1993.

- Analysis of rockwool fibers by scanning electron microscopy. A report to Lapinus Fibres, B.V., Netherlands. Nolan RP, Langer AM, 13 p., November 29, 1993.
- Analysis of rockwool fibers by scanning electron microscopy. A report to Lapinus Fibres, B.V., Netherlands. Nolan RP, Langer AM, 25 p., November 29, 1993.
14. Report on Chrysotile Fibers Released from the Manipulation of Asbestos Packings. Nolan RP, Langer AM. 3p. 2Figs. November 30, 1993.
 15. Release of Rockwool Fibers From Compressed Gasket Material. A report to Lapinus Fibres, B.V., Netherlands. Nolan RP, Langer AM, 38 p., Appendix, January 31, 1994.
 16. Analysis of Quarry Sample #01, #08 and #18 for asbestos content. The Readymix Group, Australia. Nolan RP, Langer AM, 39 p., March 9, 1994.
 17. Report on Air Samples From Pine Lake Elementary School, Bloomfield, Michigan. Asbestospray Corporation. Langer AM, Nolan RP. 2p., 44 p Appendix, 2 Tables. July 14, 1994.
 18. Analytical Method for the Determination of Asbestos Minerals in Parenteral Medicines. Der Verband der chemischen industrie. Addison J, Burdett GS, Chatfield EJ, Christiansen CP, Gotz J, Kaiser D, Kurz G, Langer AM, Muhle H, Wachberger E. 76p. August 1994.
 19. Report of the Examination of Australian Quarry Dust and Mineral Specimens. The Readymix Group, Australia, Nolan RP, Langer AM, Pooley FD, 12 p., 18 figs., October 28, 1994.
 20. Health Hazard Evaluation of the CD #1 Pit Empire Mine, Palmer, Michigan. A report to Cleveland-Cliffs Corp., Nolan RP, Langer AM, Wilson R, 90 p., January, 1995, February 17, 1995.
 21. Environmental Analysis of Four Tailing Surface Samples for Arsenic and Asbestos. Nolan RP, Langer AM, Pooley FD, 41p., March 20, 1996.
 22. A Risk Assessment for Installers of Blown Glass Wool Insulation. Prepared for the Blown Glass Wool Contractors, U.S. Wilson R, Nolan RP, Langer AM, 57 p. Text, 16 Tables, Appendix, April 16, 1996.
 23. Is Respirable Fine Crystalline Silica Present in Polyethylene Dust? A Report to Novacor Chemicals, Canada. 39 p., 3 Tables; 28 Figures, June 15, 1996.

ORGANIZATION DOCUMENTS:

Evaluation of Carcinogenic Risk of Asbestos. Volume 14. Asbestos. Series. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man. Intl Agency for Res. on Cancer - WHO, Lyon. 106 p. 1977. Co-author, Panel Member.

Asbestiform Fibers - Non-Occupational Health Risks. National Academy of Sciences. National Research Council. National Academy Press, 334 p., 1984.

International Programme on Chemical Safety (IPCS). WHO. Environmental Health Criteria 53: Asbestos and Other Natural Mineral Fibres. Hannover, Germany. 194 p., 1986. Co-author, Panel Member.

4. Silica and Some Silicates. Volume 42. Series IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man. Intl Agency for Res. on Cancer - WHO, Lyon. 289 p., 1987. Co-author, Panel member.

5. Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge. Health Effects Institute, Cambridge, MA and U.S. Environmental Protection Agency. 300 p., 1991.

6. International Programme on Chemical Safety (IPCS), WHO. Workshop on Health Risks Associated With Chrysotile Asbestos. Isle of Jersey. Ann. Occup. Hyg., 38, 397-646. Presenter. Author. 1995.

7. International Programme on Chemical Safety (IPCS), WHO. Environmental Health Criteria Document For Chrysotile. Geneva, Switzerland - July 1-6, 1996. Rappateur. Co-Author. Task Group Member.

MANUSCRIPTS IN PREPARATION:

Langer AM, Kimball MR, Harlow GE: A comparison of fibrillar structure in amosite and crocidolite.

Langer AM: Distribution of amosite and chrysotile fibers in the lung of an exposed worker: role of fiber size and type.

Langer AM, et al: Amosite fiber size-distribution at a fabrication plant: mesothelioma and fiber dimension.

Langer AM, et al: Asbestos bodies in two periods of time: review, secular trends, New York City, 1915-1970.

Langer AM, et al: Asbestos bodies and age, sex, occupation of urban dwellers: asbestos bodies as indices of disease risk

POSTGRADUATE EDUCATION COURSES:

Page and Black Postgraduate, Mount Sinai School of Medicine: Asbestosis.
June, 1970

NY Academy of Sciences, Seminars for Trade Union Representatives: Occupational
Health Hazards. April, 1971

American College of Chest Physicians, Mount Sinai School of Medicine, NY: Interstitial
Pneumonias--Acute and Chronic. April, 1971

United States-USSR Onco-Epidemiology Delegation: Workshop on Basic Practical
Approaches to Environmental Carcinogenesis, Mount Sinai. February 12, 1975

Seminar Series. Division of Natural Sciences. Agents in the Environment. May, 1974.

Page and Black Postgraduate, Mount Sinai School of Medicine: Environmental Lung
Disease. June, 1976

Office of Continuing Education, Baylor Medical College, Houston, TX: Pulmonary
Diseases and Carcinoma of the Lungs, Baylor Medical School, Houston, TX.
February, 1977

New York Lung Club, Cornell University Medical College: Silicosis revisited. New
York City Tunnel and Caisson Workers: 1928-1977. November, 1977

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Recent Advances in Occupational Medicine. January, 1978

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Occupational and Environmental Pulmonary Diseases. March, 1978

Page and Black Postgraduate, Mount Sinai School of Medicine, NY: Health Effects
of Asbestos Exposure. Course Director. June, 1978

Page and Black Postgraduate, Mount Sinai School of Medicine, NY: Asbestos
Associated Diseases: With Particular Reference to United States Shipyards.
November, 1978

Page and Black Postgraduate, Mount Sinai School of Medicine, NY: Scientific Basis
for Evaluation of Occupational and Environmental Asbestos Disease. January
1979

Office of Continuing Education, Baylor Medical College, Houston, TX: Asbestos
Symposium. Asbestos-Associated Diseases, Houston, TX. October, 1979

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:

Asbestos in Shipyards. January, 1980

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Management and Control of Asbestos in Public Buildings. March, 1980

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Health Effects of Asbestos in Public Buildings. June, 1980

College of Medicine and Dentistry of New Jersey: Rutgers Medical School, Recent
Advances in Occupational Toxicology, Graduate Center, NY. September, 1980

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Recent Advances in Occupational Medicine. November, 1981

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Scientific Basis for Evaluation of Asbestos-Associated Diseases. December, 1982

Page and Black Postgraduate, Mount Sinai School of Medicine, New York, NY:
Asbestos in Schools and Public Buildings, Hasbrook Heights, NJ. March, 1985

Environmental Lung Disease. American College of Chest Physicians. Mineralogy
Techniques. Montreal, Canada. September, 1991

Environmental Geology Seminar. Graduate Center - CUNY. September, 1993-
February, 1994; 1994-1995; 1995-1996; 1996-1997; 2000-2001.

Current course listing in the graduate school include seminars in Earth and
Environmental Sciences; Interdisciplinary Concentration in Health and Society; Public
Policy and Urban Studies.

INVITED SEMINARS AND LECTURES:

Lawrence Radiation Laboratory, Livermore California. Crystallography Division.
"Analysis of Ultra-fine Mineral Dust". June, 1964.

Union College, Schenectady, NY, Department of Geology and Civil Engineering.
"Asbestos and Lung Disease." April, 1967.

Barnard College, NY, Department of Geology. "Asbestos Fiber in the Ambient Air and
Disease Potential." December, 1968.

Food and Drug Administration, Washington DC. "Asbestos Bodies in the General
Population – Fibers in Talc as Possible Sources of Exposure." May, 1968.

The Rockefeller University, Air Pollution Working Group, Health Research Council.

"Analysis of Air Samples for Inorganic Constituents." June 9, 1969.

New York University Medical Center, New York Lung Club. "Sublight Microscopic Mineral Particles in Talc Pneumoconiosis. Physiology and Mineralogical Studies." November, 1970.

Lehigh College, Department of Material Sciences and Metallurgy. "Electron Probe Characterization of Particles in Tissues." April, 1971.

Oberlin College, OH, Department of Geology. "Asbestos Dust in the Workplace and Human Disease." May, 1971.

Department of Housing and Urban Development. Asbestos and Disease. New York. August, 1971.

State University of New York at Buffalo, Department of Biophysical Sciences. "The Asbestos Problem. An Interdisciplinary Approach." April, 1972.

Queens College of the City University of New York, Department of Earth and Environmental Sciences. "Asbestos and Disease. How Wide is the Spectrum?" November, 1972.

Columbia University, NY, Department of Geology and Biological Sciences. "Contamination of the Environment with Mineral Particles." December, 1972.

College of South Hampton, Long Island University, Division of Chemical Sciences and Oceanography. "The Contamination of Lake Superior with Fibrous Silicates." January, 1973.

National Institutes of Health. Biological Effects of Asbestos. "Mechanism of Fiber Action." National Institutes of Health, Bethesda, MD, February 1, 1973.

City College of the City University of New York, Department of Earth and Planetary Sciences. "Mineral Particles and Human Disease." May, 1973.

Queens College of the City University of New York, Department of Health Sciences. "Occupational Hazards as Harbingers of Environmental Hazards." September, 1973.

Rutgers University, Colonial Conference Tri-State Environmentalists. "Recognition of Environmental Hazards: Use of Academic Facilities for Monitoring and Control of Hazards." November, 1973.

Johns Hopkins University, School of Public Health. "Asbestos Minerals and Disease." Seminar. April, 1974.

Rutgers University, Department of Environmental Sciences. "Mineral Particles in the Air." June, 1974.

Mt. Sinai Pathology Seminar Series. Studies of Minerals in Disease. With J. Churg. May, 1974.

Temple University, Department of Geology. "Amphibole Contamination of Lake Superior Water from Taconite Processing." September 20, 1974.

Mt. Sinai Physical Medicine and Rehabilitation. Environment Hazards. January 8, 1975

National Cancer Institute. Soviet Onco-Epidemiology Delegation. Mineralogy of Asbestos. Mt. Sinai, New York. February 12, 1975.

Rutgers University. Department of Environmental Science. Occupational Health 1975: Status and Prognosis. February 25, 1975.

New York Lung Club. Cornell Medical Center. A Silicosis Revisited. New York City Tunnel and Caisson Workers - 1928-1977. September 25, 1977.

American Museum of Natural History, Department of Mineral Sciences. "Minerals and Disease." September, 1978.

Rutgers University, Department of Chemistry. "Minerals and Their Biological Activity." October, 1978.

University of North Carolina, Department of Medicine. 1) "Analytical Methods of Tissue Analysis, Asbestos Bodies and Asbestos Fibers"; 2) "Inorganic Particles in Cigarettes and Cigarette Smoke." November, 1978.

Lutheran Medical Center. Current Perspectives in Environmental Health Hazards. Pulmonary Dust Burden and Response to Inorganic Particles. February 8, 1979.

University of Maine, Farmington, Department of Geology. 1) "The Asbestos Problem"; 2) "Evolution of an Environmental Scientist, A Personal View." March, 1979.

National Institutes of Health. Forms of Asbestos of Public Health Concern. Scientific Basis For Public Health Control of Environmental Asbestos Hazards. The Physical-Chemical Nature of Asbestos. Factors Relating to Biological Activity. Mazur Auditorium, Bethesda, Maryland. March 29, 1979.

School of Public Health, Columbia University. "Epidemiology of Asbestos Diseases." May 7, 1979.

New York Medical Examiner's Conference. "Analysis of Tissues for Asbestos Fiber

and Asbestos Bodies." June, 1979.

Seton Hall University, Department of Chemistry. "Minerals and Disease: Interaction Mechanisms." October 2, 1979.

American Institute of Mining Engineers, Tucson. "The Biological Effects of Inorganic Fibers: The Case Against Asbestos" (invited speaker). October, 1979.

Geological Society of London. "Mineralogy and Geochemistry of Particulates in Cigarette Smoke", with Dr. Bowes. January 11, 1980.

American Chemical Society, Staten Island Section. "Minerals and Diseases: Physical and Chemical Factors." February 19, 1980.

Society of Sigma Xi Lecture. "Man in Conflict with His Physical Environment." Invited Speaker for Initiation Ceremony, Hunter College of the City University of New York, May 13, 1980.

Universities Occupational Safety and Health Educational Resource Center. Particulant Inhalants In: Recent Advances in Occupational Toxicology. NIOSH. 26 September, 1980.

National Institutes of Health, Bethesda, Department of Health and Human Services CCERP-26. "Serpentine-Containing Host Rocks: Amphibole-Containing Host Rocks." November, 1980.

Economic Geology Chapter Queens College of the American Institute of Mining, Metallurgical and Petroleum Engineers. "Conflict Between Man and the Mineral World: Asbestos." March 26, 1981.

NIEHS-EPA-NIOSH Joint Committee at Bethesda. "Mount St. Helen's Volcanic Ash: Mineral Nature and Biological Activity." July 23, 1981.

The Rockefeller University. "Minerals as Toxic Agents: Important Parameters and Mechanisms." Invited speaker in series on Comparative Toxicology, February 12, 1981.

Kettering Laboratory, University of Cincinnati Medical Center. "Silica and Silicosis: Mechanisms." April 8, 1981.

University of California, Irvine, Occupational and Environmental Health Center. "Physicochemical Properties of Inorganic Dusts and Biological Consequences of Exposure." Occupational Medicine Series, December 2, 1981.

Barlow Hospital, Los Angeles, University of Southern California Medical School. "Tissue Analysis for Asbestos, Comparative Techniques." Chest Service, Department of Medicine, December 3, 1981.

Appalachian Laboratory for Occupational Safety and Health NIOSH-CDC, Morgantown, West Virginia. "Surface Properties of Silica and Its Biological Activity." February 24, 1982.

National Institute for Occupational Safety and Health. "Silica and Silicosis." Cincinnati, March 24, 1982.

Society of Sigma Xi Lecture, Queens College of the City University of New York. "The Case Against Chrysotile Asbestos." December 2, 1982.

National Institute of Environmental Health Sciences, Pathobiology of Mesothelioma, Research Triangle Park, NC. "Physicochemical Character of Dust and its Role in Inducing Human Mesothelioma." January, 1983.

Geology Seminar, Long Island University, College at South Hampton. "The Biological Effects of Asbestos." March 18, 1983.

Graduate Seminar, Rutgers University, Department of Geology. "Physical-Chemical Properties of Minerals and Their Biological Activities." April 13, 1983.

Symposium on Fibrous Minerals, American Lung Association Annual Meeting, Kansas City, MO. "Mineralogy of Mineral Fibers." May 8, 1983.

Faculty Research Collegium, Ph.D. Program Earth and Environmental Studies, CUNY, Graduate Center, NY. "Physicochemical Properties of Minerals Controlling Biological Activity." March 6, 1984.

Graduate Seminar, Department of Geology, Princeton University. "Minerals and Disease." Princeton, NJ, March 8, 1984.

Graduate Seminar, Department of Biology, New York University, New York, NY. "Asbestos: Biological Considerations." April 16, 1984.

Medical Geology Conference on Health Threatening Toxins in Water. "Asbestos Fiber in Water." May 3, 1984.

Asbestos Information Association of North America, Annual Meeting, Alexandria, VA. "Asbestos Substitutes. How Safe are They?" September 18, 1985.

American Society for Testing Materials, Annual Meeting, Bal Harbour, FL. "Method for Testing Indoor Air for Asbestos. Analytical Electron Microscopy." November 4,

1985.

University of Southern California Medical School. "Membranolytic Properties of Quartz and Phosphorylated Chrysotile Fiber." January 29, 1985. Main Campus. "Asbestos Fiber in Lung Tissue - Analysis by Analytical Electron Microscopy." January 30, 1986.

Mine Health Research Advisory Committee. CDC-NIOSH. The Mineralogy of the Asbestos Minerals. Tucson, Arizona. May 29, 1986.

Milton Kannerstein Lecture. "Mineral Dust and Pulmonary Lesions." Annual Meeting of the Klemperer-Otani Society. Mount Sinai, June 5, 1986.

Northeast Regional Environmental Public Health Center, University of Massachusetts. Symposium: Asbestos in Play Sand. "Tremolite Analysis, Morphology, and Health Significance." February 11, 1987.

The Defense Research and Trial Lawyers Association, Reno, NV. "Analytical Protocol for the Study of Sublight Microscopic Particles in Human Tissues"; "Types and Amounts of Asbestos Fibers in the Pulmonary Tissues of Asbestos-Exposed Workers in the United States." October 30, 1987.

The Manville Settlement Trust Asbestos Disease Seminar, Washington, DC. "Asbestos Fibers: The Physico-Chemical Properties and Health Effects." March 16, 1988.

Asbestos Fiber Type and Risk of Disease, Conference: New York - New Jersey Environmental Expo: The Source for Environmental Solutions. Seminar 7E, The Management of Asbestos in the 1990's. Thursday, October 18, 1990.

American Industrial Hygiene Association, Georgia Section, Atlanta Georgia. Conference: The Asbestos Controversy. Has the Public Been Properly Informed? "Understanding the Asbestos Risk." November 30, 1990.

Armstrong Defense Group. Memphis, Tennessee. The Asbestos Saga and the Star Wars Trilogy: The Empire Strikes Back! Thursday, April 25, 1991.

Department of Medicine - Pulmonary, New York University Medical Center. Pulmonary Grand Rounds. Particle Characteristics Responsible for Pneumoconiosis and Cancer. Tuesday, September 3, 1991.

Nelson Institute of Environmental Medicine, New York University School of Medicine. Surface Properties of Minerals as Determinants of Biological Activity. Tuxedo, New

York. Wednesday, October 23, 1991.

Defense Research Institute. Current Issues in Asbestos in Buildings Seminar. Report From the Health Effects Institute. Orlando, Florida. Friday, January 24, 1992.

Characteristics of Mineral Fibers - Critical Research Needs. Invited to Workshop on Chemical and Biological Interactions of Glass. Bethesda, Maryland, March 5-6, 1992.

Mealey's National Lead Litigation Conference. Presented: Bioavailability of Lead. April 22-23, 1993. Philadelphia, Pennsylvania.

McGrath Fund Lectures. Current Topics in Environmental Science. Division of Natural Sciences, South Hampton Campus of Long Island University. Update on Asbestos. An Asbestos Risk Assessment. May 3, 1994.

United States Environmental Protection Agency. Environmental Asbestos Workshop: Chrysotile Asbestos. Comparative carcinogenicity with the amphibole asbestos varieties. Monterey, California. October 7, 1994.

Defense Research Institute Symposium. Asbestos Medicine Seminar. Health risks associated with low-level asbestos exposures. (with Dr. B. Gee). New York. October 26-28, 1994.

McGrath Fund Lectures. Current Topics in Environmental Science. Division of Natural Sciences, South Hampton Campus of Long Island University. United Nations Conference on the Environment and Development. May 3, 1995.

Lecture Series Department of Chemical Engineering, City College of the City University of New York. Inorganic Dust in the Environment. Risk Analysis. February 1, 1996.

City University Graduate Center. Asbestos and Radon: Dangers of Diversions? Graduate Center, April 10, 1996.

McGrath Fund Lectures. Current Topics in Environmental Science. Division of Natural Sciences, South Hampton Campus of Long Island University. Man-made Vitreous Fibers as Asbestos Substitute. Are They Safe? April 24, 1996.

McGrath Fund Lectures. Current Topics in Environmental Science. Division of Natural Sciences, South Hampton Campus of Long Island University. Epidemiology and Human Studies of PCBs. Is there a risk? April 29, 1998.

Defense Research Institute. Asbestos Seminar. The Mineralogy of Fibers and Its

Relation to Asbestos Causation. November 11-12, 1999. Las Vegas, Nevada.

McGrath Fund Lectures. Current Topics in Environmental Science. Division of Natural Sciences, South Hampton Campus of Long Island University. "Is South Hampton Surrounded by a Sea of Carcinogens?" April 26, 2000.

Andrews Essential Skills in Asbestos Litigation. A Look at the Mineralogy of Asbestos. November 30, 2000. Washington DC.

INVITED INTERNATIONAL MEETINGS AND CONFERENCES:

Physics and Chemistry of Asbestos Minerals. Oxford, July, 1967. Presented: The Nature of Soft and Harsh Chrysotile (with Kerr PF.).

Second International Conference on the Biological Effects of Asbestos. Dresden, DDR, April, 1968 (two papers with Berkley C, Sastre A, Arneson A and Schwartz J).

International Conference on Pneumoconiosis. Johannesburg, April 23-May 2, 1969. Presented: Electron Microprobe Analysis of Asbestos Bodies (with Rubin IB and Selikoff IJ).

Working Group: Asbestos and the Asbestos Diseases. Cardiff, April 6-9, 1970. Presented: Identification of Minerals in Tissue with the Electron Probe.

British Occupational Hygiene Society: Inhaled Particles and Vapors. Imperial College, London, September, 1970. Presented: Inorganic Fibers, Including Chrysotile, in Lungs at Autopsy (with Baden V, Selikoff IJ, and Hammond EC).

Fifth National Conference on Electron Microprobe Analysis. New York, July 21-24, 1970. Invited paper: Electron Microprobe Analysis of Particles in Tissues (with Berkley C and Rubin IB).

Second International Clean Air Congress. Washington, DC, May 1971. Paper with Selikoff IJ.

International Agency for Research on Cancer. WHO, Lyon, September, 1972. Presented: Identification of Single Asbestos Fibers in Human Tissues with (Pooley FD)

6th International Meeting of Forensic Sciences. Edinburgh, September, 1972. Presented paper Asbestos Fiber in Human Lungs: Forensic Significance in Environmental Disease (with Ehrenreich T).

Dialogues in Microscopy, 1973, NY. Microscopical Society. Chaired Session: Identification of Asbestos, May, 1973.

International Conference on the Biological Effects of Ingested Asbestos. NIEHS sponsored. Pinehurst, NC, November, 1973.

International Conference on Environmental Sensing and Assessment. Las Vegas, NV, September, 1975 (paper with Rubin IB and Wolff M). Chaired 2 Sessions: Fine Particles-7; Fine Particles-2. United States Environmental Protection Agency.

Conference on Health Problems of Energy Technologies. Held by NIEHS, January, 1976. Pinehurst, North Carolina.

Mineralogical Society of London. Centenary of the Mineralogical Society. London, April, 1976. Presented paper Nature and Range of Mineral Dust in the Environment. London.

International Agency for Research on Cancer. The World Health Organization, Lyon. Invited member of working group, December, 1976. Chemical Carcinogenesis Monograph Series. Evaluation of Carcinogenic Risk of Asbestos, Vol. 14.

Third International Symposium on Detection and Prevention of Cancer. International Agency for Research on Cancer. April 26-May 1, 1976. New York. Identification of Microparticles. Workshop Chairman.

Royal Society of Medicine. Meeting Focusing on Occupational Diseases. London, April, 1977. Presented paper Asbestos Content of Dust Encountered During Brake Maintenance and Repair (with Rohl AN, Weisman I, and Klimentidis R).

Invited Consultant to Institute of Public Health. Oslo, Norway, May, 1977. Presented three papers: Contamination of the Biosphere by Submicroscopic Particles; Asbestos Minerals and Their Carcinogenic Effects; Are There Safe Substitutes for Asbestos Materials?

Invited Consultant to the Ministry of Mines. Biological Effects of Asbestos. Johannesburg, October, 1977. Monograph, Ministry of Mines.

Health Hazards of Asbestos Exposure. New York, June 24-27, 1978. Presented paper on Contamination of Lake Superior with Amphibole Gangue Minerals and organized and chaired workshop on Significance of Aspect Ratio in Regulation of Asbestos Fiber Exposure. Co-authored with A Rohl Asbestos Content of Host Rock in Non-Asbestos Mining and Quarrying.

International Conference on Critical Current Issues in Environmental Health Hazards. Tel Aviv, March 4-7, 1979. Presented paper Defining New Asbestos High Risk Groups. Chairman Workshop: Laboratory Approaches in Environmental Medicine.

International Agency for Research on Cancer. WHO, Lyon, October, 1979. International Conference on the Biological Effects of Inorganic Fibers. Invited Rappateur. Physics and Chemistry of Asbestos Minerals.

Expert Consultant, International Metal Workers Federation. Geneva, September, 1980. Focus on problem: Asbestos Fiber Contamination of Metal Ore Deposits.

International Conference on Crystalline Deposits in Human Tissues. August 13-14, 1981. Mount Sinai Hospital, Toronto. Presented paper The Role of Analytical Electron Microscopy in Diagnosis of the Pneumoconiosis (with Weisman I, Adams A, and Pooley F).

Annual Symposium Scanning Electron Microscopy. Anaheim, CA, April, 1982. Presented paper Identification Characterization and Quantitation of Asbestos Fibers in Human Lung Tissue by Analytical Electron Microscopy.

Fourth Annual Rocky Mountain Center for Occupational and Environmental Health Center. Salt Lake City, April, 1982. Invited to present two papers: Fibrous Minerals: Properties and Biological Activity; Relationship Between Surface Properties and Biological Activity in Health Issues Related to Metal and Non-Metallic Mining.

World Symposium on Asbestos. Montreal, May 24-27, 1982. Presented paper Mineral Fibers: Properties Imparting Biological Activity.

6th International Pneumoconiosis Conference. Bochum, Federal Republic of Germany, September, 1983. Presented two papers: Recognition of Quartz by the Erythrocyte Membrane; Physicochemical Factors Effecting Membrolytic Properties of Quartz (with Nolan RP, Foster KW, and Simenski R). Chaired Session: Etiopathogenesis of Silicosis.

Program of Research on Asbestos. University of Sherbrooke, December 5-6, 1983. Presented lecture Physicochemical Properties of Minerals as Related to Biological Activities.

Workshop on the Pathobiology of Mesothelioma. Etiology and Pathogenesis. Presented Properties of Mineral Fibers and Disease. National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina. June 11, 1983.

2nd International Congress on Applied Mineralogy. February 22-25, 1984. Presented two papers: Asbestos, Fibrous Minerals, Acicular Cleavage Fragments and the Minerals Industries; Minerals and Disease: The Association Between Exposure to Minerals and Rock Dusts and the Occurrence of Human Disease.

Workshop on the Assessment of Mineral Fibers from Human Lungs. Oxford, England, September 17-19, 1984. Keynote speaker Problems of Tissue Analysis with the Analytical Electron Microscope.

3rd International Workshop on the In Vitro Effects of Mineral Dusts. Schluchsee, Hochschwarzwald, FRG, October, 1984. Physicochemical Properties of Minerals Relevant to Biological Activities. State of the Art, (paper with Nolan RP); Alteration of surface of quartz and altered biological activity. Member International Organizing Committee.

Workshop on Biological Effects of Chrysotile. General Motors Cancer Research Foundation. Cardiff, Wales, May 7-9, 1986. The Mineralogy of Chrysotile Asbestos: Physicochemical Properties as Determinants of Disease Potential (with Nolan RP).

International Programme on Chemical Safety (IPCS). WHO Environmental Health Criteria 53. Asbestos and other Natural Mineral Fibres. Hannover, Germany. Session chairman, co-author. 194 p., 1986.

International Agency for Research on Cancer. The World Health Organization. Invited member of working group. Lyon, France, July, 1986. Chemical Carcinogenesis Monograph Series. Evaluation of Carcinogenic Risk of Fibrous Talc, Wollastonite, Palygorskite, Sepiolite, Erionite and Crystalline Silica. Vols. 34-42.

Symposium: Mineral Fibers in the Non-Occupational Environment. IARC-WHO. Lyon, France, September 8-10, 1987. Summary of five presented papers; Round-table discussion on Environmental Risk. Presented paper: Fiber Type and Parenchymal Burden Found in Workers Occupationally Exposed to Asbestos Fiber in the United States (with Nolan RP).

Symposium: Fibers in Friction Materials. Society Automotive Engineers and the Asbestos Institute. Symposium organizer and Co-Chairman. Fibers and Health Issues. Atlantic City, NJ, October, 1987. Presented summary paper; co-authored Physicochemical Properties of Fibers and Biological Potential (with Nolan RP).

Symposium. 117th Annual Meeting of the Society of Mining Engineers. Tucson, Arizona. Mineralogical and Biological Comparison of Asbestiform and Non-asbestiform Tremolite (with RP Nolan). January 25-28, 1988.

Symposium: Safe Use of Asbestos Cement. Peruvian Ministry of Health and the Environment. The Asbestos Information Association of South America. Lima, Peru, March, 1988.

International Symposium/Workshop: Biological Interaction of Inhaled Mineral Fibers and Cigarette Smoke. Session Chairman. Presented paper: Inorganic Particles Found in Cigarette Tobacco, Cigarette Ash, and Cigarette Smoke; co-authored Physico-Chemical Properties and Membranolytic Activities of the Titanium Dioxide Polymorphs Compared to Quartz. April 10-14, 1988.

Electron Microscopy Society of America; the Microscopical Society of Canada: Presented paper: Electron Diffraction of Mineral Fibers Vs. Acicular Cleavage Fragments. Milwaukee, WI, August 7-12, 1988.

National Organizing Committee, Workshop Chairman: Hazard Recognition of Mineral Dusts. Presented: Mineral Fibers in the Lung Tissues of Persons Exposed to Asbestos in the United States; Distinguishing Between Tremolite Asbestos and Tremolite Cleavage Fragments. VIIth International Pneumoconiosis Conference, Scientific Organization Committee. Pittsburgh, PA, August, 1988.

Session Chairman: Asbestos, Pleural Pathology, and Lung Fiber Burden. VIIth International Pneumoconiosis Conference, Pittsburgh, PA, August, 1988.

Workshop on Asbestos Research. Health Effects Institute, American Academy of Arts and Sciences, Cambridge, MA, October 31-November 1, 1988.

Symposium on the Health Aspects of Exposures to Asbestos in Public Buildings. Presented: Fiber Type and Risk of Mesothelioma to Building Occupants. John F. Kennedy School of Government, Harvard University, Cambridge, MA, December 14-16, 1988.

First International Conference on Health Related Effects of Phyllosilicates. International Scientific Organizing Committee. Member International Scientific Committee. Session Chairman: Health Related Effects After Non-Occupational Exposure. Presented: Fibrous Minerals as Natural Contaminants of Phyllosilicates (with Pooley F). Paris, France, March 16-18, 1989.

International Federation of Building and Woodworkers. Health Hazards in Painting and Allied Trades. Presented: Hazards in the Painting Trade. Panelist. Geneva, Switzerland, May 8-12, 1989.

NATO Advanced Research Workshop on Mechanisms in Fibre Carcinogenesis. Presented: The Importance of Mineral Subpopulations in Biological Assays. Albuquerque, NM, October 22-25, 1990. Co-authored paper: Association of tremolite habit with biological potential, co-authored with Nolan RP, Oechsle G, Addison J, Colflesh D.

American Lung Association - American Thoracic Society. 1991 International

Conference. Presented: Mechanisms of Asbestos-Induced Pulmonary Disease: Importance of Surface Properties of Asbestos and Non-asbestos minerals in cell interaction. Anaheim, California, May 12-15, 1991.

American College of Chest Physicians. Fourth International Conference - Environmental Lung Disease. Presented: Diagnostic Methods in Occupational Lung Disease: Mineralogic Techniques. Co-Chair session: Diagnostic Methods in Occupational Lung Disease. Montreal, Canada. September 25-28, 1991.

Chemical Industry Institute of Toxicology. Workshop on Approaches to Evaluating the Toxicity and Carcinogenicity of Man-made Fibers. "Characterization of Man-made Vitreous Fibers for Experimentation Purposes." Durham, North Carolina. November 11-13, 1991.

Institute for Glass Science and Engineering. Workshop on Chemical and Biological Interactions of Glass. Discussant on Biologically Important Properties. Bethesda, Maryland. March 5-6, 1992.

International Geological Congress. Environmental Mineralogy in relation to human health and activities. Session I-3-49. Co-chair with N. Kohyama, J. Addison, Kyoto, Japan. 24 August-3 September, 1992. Introduction. Importance of environmental mineralogy. Summing up. 1 September, 1992.

Biopersistence of Respirable Synthetic Fibres and Minerals. Presented: Comparison of lung tissue mineral fibre retention of exposed workers and the general population. With RP Nolan, co-authored: Health hazard evaluation of the lung tremolite fibre content among Canadian chrysotile workers. With RP Nolan and J Addison. Round-Table discussant on: Role of Biopersistence in Pathogenicity. IARC, Lyon. September 7-9, 1992.

Symposium on Chemicals and the Environment. Chemical Specialities, '92. Invited presentation: Zeolite catalysts. Is there a health risk? Philadelphia, 3-4 November, 1992.

International Life Sciences Institute. 4th International Inhalation Symposium, Hannover. Invited Faculty Presentation: Factors Controlling the Biological Potential of Inorganic Dusts. Surface Chemistry and Character. With R.P. Nolan. 1-5 March, 1993.

Hoffmann-LaRoche Pharmaceuticals. Analysis of Medicines for Asbestos. Microscopy Protocol. Edinburgh, U.K. Institute of Occupational Medicine. April 25-26, 1993

Cellular and Molecular Effects of Mineral and Synthetic Dusts and Fibres. NATO Advanced Workshop. Invited paper: Phosphorylated Canadian chrysotile. With RP

Nolan and G Herson. Chaired session: Physico-chemical properties of minerals in relation to their biologic effects. Paris, 11-13 October, 1993.

Workshop on the Health Risks Associated with Chrysotile Asbestos. Intl. Commission on Occupational Health - Intl. Program on Chemical Safety (WHO) Presented paper: Chrysotile: The Mineral and Its Properties. Jersey, Channel Islands. 14-17, November, 1993.

Hoffmann-LaRoche Pharmaceuticals. Protocol for Analysis of Injectable Medicines for Asbestos. Workshop. Basel, Switzerland. March 2-4, 1994.

Verband der Chemischen Industries. Protocol for the Analysis of Chemicals for Asbestos. Workshop. Frankfurt, Germany. May 30-31, 1994.

Eurometaux (European Association of Metals) and the European Commission, Directorate General V. Scientific Organizing Committee InH. Seminar on Assessment of Respiratory Carcinogenic Risk from Occupational Exposure to Inorganic Substances. Meeting of the Scientific Committee. Brussels, 17-18 October, 1994.

V.M. Goldschmidt Conference. An Intl. Conference for the Advancement of Geochemistry. The Geochemical Society. Invited presentation: Chemically Modified Chrysotile Asbestos: Physical-chemical Characterization and Membranolytic Activity of Phosphorylated Canadian Chrysotile. With RP Nolan and G Herson. Pennsylvania State University, May 24-26, 1995.

Eurometaux (European Association of Metals) and the European Commission, Directorate General V. Scientific Organizing Committee. In: Seminar on Assessment of Respiratory Carcinogenic Risk from Occupational Exposure to Inorganic Substances. Meeting of the Scientific Committee. Brussels, 5-8 September, 1995.

International Seminar on Assessment of Carcinogenic Risk from Occupational Exposure to Inorganic Substances. Luxembourg, October 17-20, 1995. Scientific Committee; Editorial and Scientific Board; Chairman of Session III: Physico-chemical characterization of exposures; Co-author of presentation; Working Party Chairman.

Symposium on the Health Effects of Fibrous Materials Used in Industry Excluding Asbestos. Sydney, 30-31 October, 1995. Invited Presentation: Physical-Chemical Properties of Fibers Other Than Asbestos Used in Global Commerce. AM Langer, RP Nolan.

International Programme on Chemical Safety (IPCS), WHO. Environmental Health

Criteria Document For Chrysotile. Geneva, Switzerland. Rappateur. July 1-6, 1996. Senior author chapters 2, 3, 4, 5 and 6.

International Workshop The Health Effects of Chrysotile Asbestos: The Contribution Science to Risk Management Decisions. Member of Scientific Committee; International Organizing Committee. Co-chairman Session: Mineralogy, Modern Products and Exposures. Presented Health Experience of Individuals Exposed to Amphibole Asbestos and Mixed Fiber Types. Co-author paper Asbestos Air Concentrations and Fiber Type. Final Remarks and Summary. Montréal, 14-16 September, 1997

International Conference on the Safe and Responsible Use of Chrysotile. Member of the Organizing Committee. Invited Speaker. Contribution of Science to Risk Management Decisions. A Summary of the Scientific Meeting. Montréal, 16-19 September, 1997.

International Workshop on Simian Virus 40 (SV-40), Asbestos and Mesothelioma. Member of the Scientific Organizing Committee. Presented Historical Development of the Association Between Mineral Fiber Exposure and Human Mesothelioma. AM Langer; The Role of Lung Content Analysis in Mesothelioma Etiology. (with RP Nolan). New York 8-9 November, 1997.

Funded Research

Asbestos Disease in New York City Workers. Co-Principal Investigator. Health Research Council, New York City. July 1, 1966 – June 30, 1967. \$ 39,703.

Silica and Silicosis in New York City Foundation Workers and Tunnel Drivers. Principal Investigator. Polacheck Foundation. September 1, 1966 – August 31, 1968. \$ 10,000.

Microprobe Analysis of Asbestos Bodies and Pseudo-Asbestos Bodies. Co-Principal Investigator. USPHS-National Institutes of Health. June 1, 1967 – May 31, 1969. \$ 133,245.

Asbestos Exposure Risk in Defined Human Population. Co-Principal Investigator. National Institutes of Health. May 1, 1968 – April 30, 1973. \$ 1,306,281.

Biological Effects of Modified Inorganic Fibrous Particles. Co-Principal Investigator. Johns Manville Corporation. \$ 61,930.

Insulation Industry Hygiene Reports. Co-Principal Investigator. Johns Manville Corporation, International Association of Heat and Frost Insulators and Asbestos Workers, National Institutes of Health. September 15, 1968 – September 14, 1973. \$ 2,500,000.

Asbestos Air Pollution in New York City. Co-Principal Investigator. Health Research Council and the Department of Air Resources, New York City. December 1, 1968 – November 30, 1970. \$ 110,455.

Inorganic Particles – Biological Systems Interactions. Principal Investigator. **Career Development Award**, National Institute of Environmental Health Sciences. June 1, 1969 – May 31, 1974. \$ 125,000.

Asbestos Exposure and Cancer in the General Population. Co-Principal Investigator. National Institutes of Health, American Cancer Society. December 1, 1969 – November 30, 1971. \$ 105,539.

Inorganic Particles in Cigarettes and Cigarette Smoke. Principal Investigator. National Institutes of Health. July 1, 1971 – June 30, 1973. \$ 65,730.

Environmental Cancer in US Industries. Co-Principal Investigator. American Cancer Society. September 1, 1971 – August 31, 1974. \$ 289,321.

Asbestos Exposure and Cancer in the General Population. Co-Principal Investigator. National Institutes of Health, American Cancer Society. December 1, 1971 – November 30, 1973. \$ 254,569.

Asbestos Air Pollution. Extent, Persistence, Effects. Co-Principal Investigator. National Institutes of Health. January 1, 1972 – December 31, 1974. \$348,858.

Asbestos in Therapeutic Drugs for Human Use. Co-Principal Investigator. National Institutes of Health. April 1, 1972 – March 31, 1973. \$ 49,230.

Effects of Asbestos in Water (Lake Superior). Co-Principal Investigator. US

Environmental Protection Agency. June 1, 1973 – October 30, 1973. \$ 47,970.

Environmental Agents. Relation to Human Health Effects. Co-Principal Investigator. National Institutes of Health (NIEHS). June 1, 1973 – August 31, 1978. \$ 2,823,220.

Asbestos in Brake Drum Dusts. Principal Investigator. Ford Motor Company. July 1, 1973 – June 30, 1975. \$ 10,000.

Populations at High Risk for Lung Cancer. Establishment of Cohorts and Development of Serial Surveillance. Co-Principal Investigator. National Institutes of Health, American Cancer Society. August 1, 1973 – July 31, 1975. \$ 78,572.

Asbestos Exposure of Workers and Public From Brake Linings. Co-Principal Investigator. Health Research Council, New York City. July 1, 1975 – June 30, 1976. \$ 12,980.

Asbestos Exposure with Brake Lining Service and Repair. Co-Principal Investigator. Health Research Council, New York City. July 1, 1976 – June 30, 1977. \$ 51,142.

Residency Training in Occupational Medicine. Co-Principal Investigator. National Institute for Occupational Safety and Health. July 1, 1976 – June 30, 1978. \$ 105,491.

Asbestos in Brake Workers Lungs. Principal Investigator. National Institute for Occupational Safety and Health. September 1, 1977 – August 31, 1979. \$ 95,223.

Environmental Health Sciences Center Grant. Co-Principal Investigator. National Institutes of Health (NIEHS). September 1, 1978 – August 31, 1983. \$ 4,841,529.

Environmental Dusts and Macrophage Activation. Co-Principal Investigator. National Cancer Institute. March 1, 1979 – February 28, 1982. \$ 148,461.

Surface Properties of Chrysotile Asbestos and its Role in Biological Potential. Principal Investigator. July 1, 1979 – June 30, 1981. \$ 20,000.

Environmental Cancer Research Project. Co-Principal Investigator. American Cancer Society. September 1, 1980 – August 31, 1981. \$ 284,540.

Saint Regis Health Study. Co-Principal Investigator. Canadian Ministry of Health. July 1, 1981 – June 30, 1982. \$ 1,016,581.

Activity of Amosite Asbestos and Grunerite Fragments. Co-Principal Investigator. National Institute of Occupational Safety and Health. September 1, 1982 – August 31,

1984. \$ 143,396.

Environmental Health Sciences Center Grant – Supplement. Co-Principal Investigator. Group Leader. National Institutes of Health (NIEHS). July 1, 1984 – June 30, 1986. \$ 300,000.

Biological Activity of Modified Chrysotile Asbestos Fiber. Principal Investigator. Societe Nationale de L'Amiante, Canada. September 1, 1984 – December 31, 1986. \$ 300,000.

Biological Activity of Asbestos Substitutes. Principal Investigator. Societe Nationale de L'Amiante, Canada. January 1, 1987 – March 31, 1987. \$ 15,000.

Analysis of Play Sand for its Asbestos Content. Principal Investigator. US Consumer Products Safety Commission. November 1, 1987 – February 1, 1988. \$ 4,000.

Analysis of Talcs for its Mineral Character. Principal Investigator. Vanderbilt Minerals Company. April 1, 1988 – December 1, 1988. \$ 32,000.

Surface Properties of Asbestos and Substitutes. Principal Investigator. Asbestos Institute of Canada. April 1, 1987 – March 31, 1988. \$ 10,000.

Evaluation of Microscopy Laboratories Engaged in Particle Analysis. Co-Principal Investigator. Battelle Laboratories. March 1, 1988 – June 30, 1990. \$ 130,500.

Wollastonite in Animal Lungs. Principal Investigator. National Toxicology Laboratory, NIEHS. August 1, 1988 – June 1, 1989. \$ 38,000.

Modified Asbestos, Chrysophosphate, Surface Properties. Principal Investigator. Societe Nationale de L'Amiante, Canada. April 1, 1988 – September 1, 1990. \$ 50,000.

Fibers in Vermiculite. Principal Investigator. State of Montana. \$ 900.

Characterization of Asbestiform and Non-Asbestiform Amphiboles. Principal Investigator. Vanderbilt Minerals Company. June 1, 1989 – May 31, 1994. \$ 162,000.

Studies of Asbestos Contamination of Building Air. Principal Investigator. Continental Insurance Company. June 30, 1988 – June 30, 1994. \$ 50,000.

Asbestos-Emissions During Gasket Replacement. Co-Principal Investigator. Durabla Company. January 30, 1991 – December 31, 1992. \$ 40,000.

Release of Rockwool Fibers From Gaskets. Principal Investigator. Lapinus Fibers, B.V. January 1, 1993 – June 30, 1994. \$ 7,000.

Asbestos Release From Plumbing Packing. Co-Principal Investigator. Sexauer Plumbing Supplies. October 1, 1992 – June 30, 1993. \$ 10,000.

Asbestos in the Lungs of Exposed Workers. Principal Investigator. W.R.Grace Company. March 1, 1993 – February 28, 1995. \$ 90,000.

Applied Technology Equipment Assistance Grant. Co-Principal Investigator. New York State. September 30, 1993 – August 31, 1995. \$ 710,000.

Mineral Analysis of Quarry Samples. Co-Principal Investigator. Ready Group of Australia. December 10, 1993 – June 1, 1994. \$ 10,000.

Ecaterinburg Working Project. Chrysotile in Russia. Co-Principal Investigator. The Asbestos Institute, Canada, W.R.Grace Company. June 1, 1994 – May 31, 1995. \$ 30,000.

Risk Identification and Management of Fibers in Iron Ore. Co-Principal Investigator. Cleveland Cliffs, Incorporated. April 1, 1994 – September 1, 1996. \$ 40,000.

Health Risks to Workers Applying Blown Glass Insulation. Co-Principal Investigator. Glass Insulation association. July 1, 1995 – September 1, 1996. \$30,000.

Health Risks to Workers Applying Blown Cellulose Insulation. Co-Principal Investigator. January 15, 1997 – September 1, 1997. \$ 10,000.

Workshop on Biological Risks Associated With Chrysotile Asbestos Exposure. Co-Organizer. Health Quebec. June 30, 1997 – December 31, 1997. \$ 100,000.

International Workshop on SV-40 Virus and Asbestos. Co-Organizer. Coalition to Support Mesothelioma Research. August 1, 1997 – December 1, 1997. \$ 25,000.

Mechanisms and Treatment Strategies of Lung Injuries Following Exposure To Fine Particles of Desert Sand. Co-Principal Investigator. US Army Medical Research Acquisition Activity. In Review. \$ 887,316.

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
1. Asbestos disease in New York City workers	Co-Principal Investigator/Mineralogist	07/01/66-06/30/67	Health Research Council, NYC	\$ 39,703
2. Silica and Silicosis	Principal Investigator Mineralogist	09/01/66-08/31/68	Polacheck Foundation	10,000
3. Microprobe analysis of asbestos-pseudo asbestos bodies	Co-Principal Investigator	06/01/67-05/31/69	NIH	133,245
4. Asbestos exposure risk in defined human populations	Co-Principal Investigator/Mineralogist	05/01/68-04/30/73	NIH	1,306,281
5. Biological effects of modified inorganic fibrous particles	Co-Principal Investigator/Mineralogist	07/01/68-06/30/69	Johns-Mansville Corporation	61,930
6. Insulation industry hygiene reports	Co-Principal Investigator	09/15/68-09/14/73	Johns-Mansville Corporation	500,000
7. Asbestos air pollution in New York City	Co-Principal Investigator	12/01/68-11/30/70	HRC-NY DAR-NY	110,455
8. Inorganic particles biological systems interactions	Principal Investigator Career Development Award	06/01/69-05/31/74	NIH-NIEHS	125,000

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
9. Asbestos exposure and cancer in the general population	Co-Principal Investigator	12/01/69-11/30/71	NIH	105,539
10. Inorganic particles in cigarettes and cigarettes smoke	Principal Investigator	07/01/71-06/30/73	NIH	65,730
11. Environmental cancer in US industries	Co-Principal Investigator	09/01/71-08/31/74	ACS	289,321
12. Asbestos exposure and cancer in the general population	Co-Principal Investigator/Mineralogist	12/01/71-11/30/73	NIH	254,569
13. Asbestos air pollution; extent persistence, effects	Co-Principal Investigator/Mineralogist	01/01/72-12/31/74	NIH	348,858
14. Asbestos in therapeutic drugs for human use	Co-Principal Investigator/Mineralogist	04/01/72-03/31/73	NIH	49,230
15. Effects of asbestos in water (Duluth)	Co-Principal Investigator/Mineralogist	06/01/73-10/30/73	EPA	47,970
16. Environmental agents, relation to human health effects	Co-Principal Investigator	06/01/73-08/31/78	NIH	2,823,220

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
17. Asbestos in brake drum dusts	Principal Investigator	07/01/73-06/30/75	Ford Motor Company	10,000
18. Population at high risk of lung cancer: establishment of cohort and development of serial surveillance	Co-Principal Investigator	08/01/73-07/31/75	NIH	78,572
19. Asbestos exposure of workers and public from brake linings	Co-Principal Investigator	07/01/75-06/30/76	HRC-NY	12,980
20. Asbestos exposure with brake lining service and repair	Co-Principal Investigator	07/01/75-06/30/77	HRC-NY	51,142
21. Residency training in occupational medicine	Co-Principal Investigator	07/01/76-06/30/78	NIOSH	105,491
22. Asbestos in brake workers' lungs	Principal Investigator	09/01/77-08/31/79	NIOSH	95,223
23. Environmental Health Sciences Center Grant	Co-Principal Investigator	09/01/78-08/31/83	NIEHS	4,841,529

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
24. Environmental dusts and macrophage activation	Co-Principal Investigator/Mineralogist	03/01/79-02/28/82	NCI via Sloan-Kettering Institute	148,461
25. Surface properties of chrysotile asbestos and its role in biological potential	Principal Investigator	07/01/79-continued yearly	Mobil Foundation	8,000 12,000
26. Environmental cancer research project	Co-Principal Investigator	09/01/80-08/31/81	ACS	284,540
27. Particle analysis St. Regis Health Study	Co-Principal Investigator	07/01/81-06/30/82	Canadian	1,016,581
28. Activity of amosite asbestos and grunerite fiber	Co-Principal Investigator/Mineralogist	09/01/82-08/31/84	NIOSH	143,396
29. Environmental Health Sciences Center Grant	Co-Principal Investigator/Mineralogy Group Leader	07/01/84-06/30/86	NIEHS	300,000
30. Biological activity of modified chrysotile asbestos fiber	Principal Investigator	09/01/84-12/31/86	SNA, Canada	300,000
31. Biological activity of asbestos substitutes	Principal Investigator	01/01/87-03/31/87	SNA, Canada	15,000

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
32. Analysis of play sand for asbestos content	Principal Investigator	11/01/87-02/01/88	Consumer Products Safety Commission	4,000
33. Analysis of talcs for mineral character	Principal Investigator	04/01/88-12/01/88	Vanderbilt Talc Company	32,000
34. Surface properties of asbestos and substitutes	Principal Investigator	04/01/87-03/31/88	Asbestos Institute	10,000
35. Evaluation Microscopy Laboratories	Co-Principal Investigator	03/01/88-06/30/90	Battelle, Columbus	130,500
36. Wollastonite in animal lungs	Principal Investigator	12/01/88-06/01/89 08/01/88-12/01/88	NSI - National Toxicology Program	38,000
37. Modified asbestos; asbestos substitutes; surface properties	Principal Investigator	04/01/88-09/01/90	SNA, Canada	50,000
38. Fibers in vermiculite	Principal Investigator	08/01/88-09/01/88	State of Montana	900
39. Characterization and biological potential of asbestiform and non-asbestiform amphiboles	Principal Investigator	06/01/89-current	Vanderbilt Talc Company	162,000

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
40. Talc and its associated mineral impurities	Principal Investigator	08/01/89-02/29/91	Georgia Pacific Company	32,000
41. Study of asbestos contamination of building air	Principal Investigator	06/30/88-06/30/94	CNA Insurance Company	50,000
42. Asbestos-emissions during gasket replacement	Co-Investigator	01/30/91-12/31/92	Durabla Company	40,000
43. Release of Rockwool fibres from gaskets	Principal Investigator	01/01/93-6/30/94	Lapinus Fibres, B.V.	7,000
44. Asbestos-release from plumbing supply products	Co-Investigator	10/01/92-6/30/93	Sexauer Manufacturing Company	10,000
45. Asbestos in the lungs of exposed workers	Principal Investigator	03/01/93-present	W.R. Grace & Company	90,000
46. Applied Technology - Equipment Assistance Grant	Co-Investigator	09/93-present	New York State Higher Education Assisting Technology	710,000
47. Mineral Analysis of Quarry Samples	Co-Investigator	12/10/93-6/1/96	Ready Group of Australia	10,000

PROJECT	ROLE IN PROJECT	PROJECT PERIOD	SOURCE OF FUNDS	TOTAL DIRECT SUPPORT
48. Ecaterinburg Workshop Project - Chrysotile	Co-Investigator	6/94-present	The Asbestos Institute & the W.R. Grace Co.	30,000
49. Risk Identification and Management of Fibers in Iron Ore	Co-Investigator	4/1/94-9/1/96	Cleveland Cliffs, Inc., Cleveland, Ohio.	40,000
50. Health Risks to Workers Applying Blown Glass Insulation	Co-Investigator	7/1/95-9/1/96	Glass Insulation Association	30,000
51. Health Risks to Workers Applying Blown Cellulose Insulation	Co-Investigator	1/15/97-present	Glass Insulation Association	10,000 Further support pending
52. Workshop on Biological Risks Associated with Chrysotile Asbestos Exposure	Co-Organizer	6/30/97-12/31/97	Health Quebec	100,000
54. Mechanisms and Treatment Strategies Of Lung Injuries...Fine Desert Sand	Co-Investigator	10/01-00- 12/31/03	Office of Naval Research	980,386 In Review

55. Mechanisms and Treatment...	Co-Investigator	10/01/00-2/28/03	US Army Medical Research Acquisition Activity	887,316 In Review
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March 23, 2001

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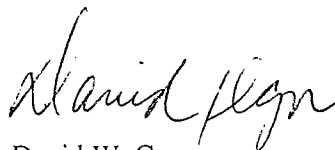
VIA HAND DELIVERY

Re: Cause No. 99-08033-B; *Malcolm Lee Murphy, Jr. and Annette Harbert Murphy v. Owens-Corning Fiberglas, et al.*; County Court at Law No. 2 for Dallas County, Texas

Dear LeAnn:

Enclosed please find Defendant Elliott Turbomachinery's First Supplemental Response to Plaintiff's Requests for Disclosure in the above-referenced case. Please call me with any questions or comments. Thank you for your assistance.

Sincerely yours,


David W. Crowe

DWC/lgv
Enclosures
cc: All Co-Defendants (w/copy) - via regular mail