INDOOR AIR QUALITY AND WORK ENVIRONMENT STUDY

EPA HEADQUARTERS BUILDINGS

SUPPLEMENT TO VOLUME 1:

ADDITIONAL EMPLOYEE ADVERSE HEALTH EFFECTS INFORMATION

NOVEMBER 20, 1989

NATIONAL FEDERATION OF FEDERAL EMPLOYEES
LOCAL 2050

AMERICAN FEDERATION OF GOVERNMENT EMPLOYEES
LOCAL 3331

Printed on Recycled Paper

SUPPLEMENTARY INFORMATION RELATED TO THE INDOOR AIR QUALITY ASSESSMENT OF EPA HEADQUARTERS

A three volume report on the indoor air quality at headquarters, U.S. Environmental Protection Agency has been undertaken. It attempts to be a thorough and comprehensive study of the "perceived and actual" quality of the indoor air environment at EPA Headquarters buildings. As of mid-November, 1989, only Volume I has been completed. Volume I is a report on an employee health survey conducted in February, 1989.

The unions believe that to make the three-volume study as useful to the public as possible, to more completely reflect employees' views on the state of air quality at EPA headquarters, to make known the full extent and severity of injuries to employees, and to promote effective and timely action by EPA management on its indoor air problems, all available information on the incident which prompted the three-volume study in the first place (installation of certain new carpet and attendant employee injuries) should be conveniently packaged and published forthwith. The unions' preferred approach was to include the material contained here as Appendix D to Volume I. This did not prove possible, and this Supplement is therefore being co-produced with Volume I as a companion document.

The unions believe that this Supplement is necessary because Volume I reports only on employee responses to the health survey questions, and therefore does not adequately address the most serious injuries suffered by EPA employees over the period October, 1987 through the Summer of 1989--induction of multiple chemical sensitivity. Further, other important information, including medical/professional opinions as to the significance of employees' health status is not included in Volume I. The unions believe that waiting for six or more months for this information to be published in subsequent Volumes of the report is not in the best interest of EPA, its employees or the general public (many of whom suffer from afflictions mimicking those of EPA employees).

The Supplement includes an analysis of data gathered by Local 2050, National Federation of Federal Employees and by Mr. Mark Ennen, an industrial hygienist who interviewed employees during the Winter/Spring of 1988. This analysis is in the form of a paper titled, "Carpet/4-Phenylcyclohexene Toxicity: The EPA Headquarters Case", presented before the Society for Risk Analysis, October 30, 1989. Also included are documents relating to petitions sent by employees to EPA management, letters from public health

professionals commenting on the implications of Volume I and on the indoor air quality at EPA Headquarters, and narratives from 18 employees, most of whom suffered induction of multiple chemical sensitivity at EPA Headquarters following exposure to new carpet fumes from October, 1987 through Summer, 1988.

Bob Carton

Bob Carton, Ph.D., President
NFFE Local 2050

Kirby Biggs

Kirby Biggs, Steward
Health & Safety
AFGE Local 3331

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MARK E. BRADLEY, M.D., M.P.H.
OCCUPATIONAL MEDICINE
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(301) 299-8826

June 25, 1989

The Honorable William K. Reilly
Administrator
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Mr. Reilly:

I am a physician whose specialty is occupational medicine. From mid-November, 1988, until the end of May, 1989, I worked as a consultant physician at the EPA Health Unit. I am writing to you, because my previous attempts to raise management concerns have been ignored.

During the period that I worked at the EPA, I interviewed and examined approximately 60 of your employees who work at the EPA headquarters. I have very serious concerns about the health and well-being of these individuals, and many others who I did not examine. The purpose of this letter is to share these concerns with you, and provide a first-hand, third party view of the building related illnesses, which are occurring at your facility.

During the six and a half month period that I was a consultant at the EPA Health Unit, at least 80% of the individuals who I examined, had bone fide medical problems, which I believe are caused by working at the Waterside Mall complex. Fifty to sixty percent of these folks had symptoms and physical findings which were typical of a "Tight Building Syndrome", that is to say eye and throat irritation, headaches, and so forth. Some of these people were severely affected. Thirty to forty percent of the patients that I examined had symptoms and findings of airway hyperreactivity which can be considered to be a form of occupational asthma. Ten percent of patients had evidence of allergic alveolitis, an inflammatory reaction in the alveoli and bronchioles of the lung resulting from an immune interaction between inhaled organic particles, circulating antibodies and sensitized lymphocytes. This condition can be progressive, leading to progressive pulmonary impairment and death. (You will note that these percentages total more than 80%. The reason for this is that a fair number of these patients had more than one process ongoing.)

I am certain that during the period of time that I was seeing patients at the EPA Health Unit, that I saw only a small fraction of the people who are potentially, adversely affected by the environment of the Waterside Mall complex. Based on my experience with problems of this nature, as well as patients reports of colleagues who were having difficulties, I estimate that 10 to 20% of the personnel at your headquarters are experiencing untoward health effects. I frankly consider that there is a major public health situation at this location, and that this is not being dealt with in a timely, positive and responsible fashion. What is particularly unfortunate is that this is a totally remedial situation.

On a monthly basis, I submitted reports which noted these findings and expressed my concerns. I made multiple recommendations for investigative and remedial actions. I got absolutely no response to these reports at all, and as far as I can determine no action of any sort has been taken to rectify this situation.

I have enclosed copies of my reports and other correspondence during this period, as well as a copy of my resume which describes my background and experience in occupational medicine.

I strongly recommend the following:

1. There are multiple instances of defective design and maintainance of the air handling and conditioning systems in the Waterside Mall, which may well be contributing to indoor air quality problems. These need to be rectified.

2. The epidemiological data that Westat has collected should be analyzed as soon as possible to determine those areas which are particular "hot spots".

3. A large scale pulmonary function screening program should be implemented to detect affected individuals.

4. Simply increasing the ventilation to provide maximum fresh air exchange would be immediately beneficial.

5. This situation does warrant consultation by a physician experienced in building related illnesses. Consideration should be given to requesting assistance from NIOSH and/or CDC. Alternatively, Dr. Kay Price is internationally recognized as an authority in this area. Dr. Price is currently Director of Occupational Medicine at the National Jewish Center for Immunological and Respiratory Diseases in Denver.

I will be happy to meet with you and your staff to discuss this situation. I recognize that this is an extremely sensitive

and emotional situation, and feel that you are in the best position to address it.

Sincerely Yours,

Mark Bradley

Mark E. Bradley, M.D.

MEDICAL IN CONFIDENCE

February 21, 1989

Dr. Juan Pozo-Olano
Health Services International, Inc.
3101 South Street, N.W.
Washington, D.C. 20007

Dear Dr. Pozo-Olano:

This letter follows up on our recent conversation regarding my occupational medical work at the Health Unit of the Environmental Protection Agency. Since mid-November, 1988, I have interviewed and examined between 35 and 40 patients at this facility. The majority of these individuals have symptoms and signs which are quite typical of a "building related illness". A few of these individuals clearly have affective disorders, such as depression, while a few others have situational adjustment disorders in which there is job "burn-out" or employee - supervisor conflict. I have unearthed a surprising amount of non-occupationally related medical conditions, such as anemia, prolapsed mitral valves, diabetes, hypercholesterolemia, carpal tunnel syndromes, etc.

One extremely disturbing finding has emerged in the course of this work. Two (and possibly a third patient) of the individuals that I have examined have shown moderate restrictive defects on their pulmonary function studies. I would point out that the likelihood of finding restrictive lung disease in 5 to 10% of the general population is very remote. Certainly, there are non-occupational disorders such as sarcoidosis that can produce restrictive lung disease. However, my concern is that this may indeed represent an occupational pulmonary disorder in these individuals. Hypersensitivity pneumonitis can cause the sort of symptoms and findings that these patients have. The etiology agent of hypersensitivity pneumonitis is frequently biological, but it can be caused by exposure to certain chemicals such as isocyanate, phthalic anhydride, etc. The fact is that the potential antigens for hypersensitivity pneumonitis is extremely large, and our knowledge of which chemicals can cause this phenomenon is quite small. For example, I have seen identical findings in individuals who have been exposed to chemicals in workplace situations as diverse as ice cream plants and research laboratories. With prolonged exposure to these substances and persistent chronic inflammation, the patient can, and often is, left with permanent and debilitating lung disease.

MEDICAL IN CONFIDENCE

My work with these individuals has thus far consisted of a evaluation of their disorders within the scope of the contract that Health Services International, Inc. has with the EPA. This has included physical examinations, chest x-rays, pulmonary function studies, serum precipitins, and other appropriate blood work. I have notified Ms. Rachel Gregory of my findings and suspicions, and have recommended that mold and fungi cultures of the work space of one individual be obtained and that an inspection of the air conditioning systems to that area be performed.

I strongly recommend that these individuals receive a more comprehensive evaluation of their pulmonary status than can be provided at the health unit. This should include examination by a pulmonologist with extensive pulmonary function testing as well as other tests that would be indicated. As luck would have it, none of these individuals has health insurance, and as two are AARP employees, there is some question regarding what organization would be responsible for medical evaluation and treatment under "Workman's Compensation", if these were determined to be occupationally related disorders. I have two concerns about this dilemma. The first relates to the health of these folks. The second, to the impact that this would have on the EPA if these are occupationally related. The "building related illness" employees at EPA are quite militant and vocal, and the potential for fanning the flames into a major conflagration is great.

This information is, of course, extremely sensitive, and should be handled in confidence. Please ponder this. I look forward to discussing this with you in further detail.

Sincerely Yours,

Mark E. Bradley, M.D.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 16 1988

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Additional Comments on OHSS Indoor Air Quality Questionnaire

FROM: Kent Anderson
Ventilation Committee Representative
Land Disposal Branch, OSW (WH-565E)

TO: David Weitzman, Director
Office of Health and Safety Staff

In addition to my earlier comments on the questionnaire, I have received additional concerns from our female employees. They are particularly concerned over the importance of identifying any long range chronic health effects as a result of our working environment. Any acute health effects which we are beginning to document may serve as an indicator to an even greater long term health problem.

Specifically, several women, never making the connection before, have identified a history of abnormal menstrual cycles and/or gynecologic complications, after it was disclosed that there were detectable concentrations of a chemical being emitted from the carpets that affected both enzyme and estrogen levels. The Office of Health and Safety should design and conduct a thorough epidemiologic cohort study on health effects of women in the EPA work environment. Although the problems that women are having are something that has not been openly discussed, several women are experiencing menstrual abnormalities. A cohort study would not only document the incidence rate of these problems, but would also determine whether the women in EPA have a higher rate of problems than the rest of the working female population. Given that EPA's female population is, on average, a young population, in their reproductive years, it is of great concern. Also, since this population is not in the menopausal or pre-menopausal age group, this would not be a significant confounding variable in the study.

Just in one OSW branch along, every women has had either abnormal growth in fibroids (which are very sensitive to estrogen levels), abnormal uncontrollable cycles (which are dictated and controlled by estrogen levels), or an inability

to conceive (also influenced by estrogen levels). This is surprising, but raises concern, considering that the majority of people showing severe acute adverse health effects are females.

There are several occupational physicians and epidemiologists who specialize in reproductive effects. There are scientists within the Agency itself that also could lend expertise. Please let me know if you are interested in pursuing such a study, since our Office can provide references for such an effort.

cc: Jack McGraw
John Chamberlin
Jim O'Leary

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 13 1988

MEMORANDUM

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

SUBJECT: Indoor Air Problems at EPA Headquarters

FROM: Arthur Day, Acting Chief
Land Disposal Branch

TO: Joseph S. Carra, Director
Waste Management Division

Numerous complaints have been voiced regarding the poor indoor air quality in the area of the second floor mall, where the majority of OSWER employees are located. Resulting health effects range in severity and include headaches; burning eyes, nose, throat, and skin; nausea; persistent cough; respiratory infections; sinusitus; dizzy spells; difficulty breathing; disorientation and confusion; numbness of limbs; and constricting larynx.

At least two EPA employees from OSW have been hospitalized due to severe reactions to contaminants which are being circulated throughout the ventilation system at Waterside Mall. At least four OSW employees have been advised by their physicians not to return to Waterside Mall as a result of building related illness.

Lack of adequate ventilation in the EPA building and offgasing of chemicals from new carpet, wall board, dividers, etc., may be resulting in relatively high levels of VOCs which are not being effectively drawn out of office space, and once drawn out, are being recirculated. Some employees have apparently been sensitized to concentrations in the air and are now experiencing reactions to very low concentrations.

For the past two years complaints have been directed to persons in the Occupational Health and Safety Staff (OHSS) who are responsible for the protection of the health and safety of EPA employees and to the Facilities Office at EPA that is responsible for building maintenance. Both of these offices have been unresponsive to comments and hostile to many.

The agreement that was made on May 2, 1988, to discontinue putting in new carpeting was a step in the right direction. It seems fairly obvious that one of the contributing factors to this problem is that much of Waterside Mall is improperly ventilated, and building-related illnesses due to carpet installation have primarily taken place in locations of Waterside Mall which have less circulation. Even though a strong correlation exists between air circulation and illnesses related to the renovation, the facilities office has begun to paint the walls in many of the areas that have poor airflow. Employees have recently complained of headaches, lightheadedness, and nausea in newly painted areas. I would therefore suggest that all renovation at Waterside Mall, including painting be stopped immediately.

Another outcome of the May 2nd decision to stop laying new carpeting was the decision to discontinue monitoring efforts which were initiated by OSWER in an attempt to identify which chemical(s) and concentration levels were causing employees to become ill. I believe that monitoring efforts should be continued whether or not carpet is being laid. Under no circumstances should any renovation activities take place (e.g., carpeting or painting) in the future without monitoring before, during, and after such activities.

Another issue which I would like to address concerns the methodology used to monitor indoor air. On April 21, Mark Ennen who is a private contractor "industrial hygienist" (hired by EPA's Occupational Health and Safety Staff) set up monitoring equipment to sample formaldehyde in Room 2817 of the second floor mall. The monitoring was done in response to a request that OSW had made subsequent to two severe reactions by OSW employees to new carpeting in adjacent offices. OSW representatives had requested that a special effort be made to air out and monitor Room 2817. On Wednesday, April 20, fans were brought into Room 2817 and the ventilation system in this area which is normally shut off after working hours was run all night. On Thursday, April 21, formaldehyde monitoring equipment was set up by Mark Ennen, directly below one fan in Room 2817.

I would like to point out that: (1) formaldehyde monitoring equipment should not be set up beneath fans if accurate readings are to be obtained, (2) such behavior hardly gives much credibility to any industrial hygienist, and (3) a certification program exists in the industrial hygiene profession which generally involves a degree in industrial hygiene, at least two years of experience in the field, and passing a rigorous examination. Mr. Ennen, to my knowledge, is not a certified industrial hygienist (CIH). Persons in the industrial hygiene field who are not certified would seldom work independently without a CIH. I am appalled that the EPA's Occupational Health

and Safety Staff would hire an industrial hygienist who is not a CIH to investigate this problem, which obviously has such important consequences.

The Occupational Health and Safety Staff have acted irresponsibly on numerous occasions. OSW employees who resided in Room 2627 (which has been reassigned a new number and is now 2631), from December 1986 to October 1987, experienced many health problems, especially during the time between June and August 1987. Such health problems included laryngitis, sore throat, persistent cough, headaches, dizzy spells, fluid in lungs, difficulty breathing, and general fatigue. Upon calling Tony Brown of OHSS, OSW staff were told that OHSS recognized that an indoor air problem existed and that they were documenting all complaints. OSW staff in Room 2627 proceeded to document all illnesses that they believed might be related to poor indoor air quality in this area. All complaints were first articulated over the phone, and the written documentation was sent directly to Tony Brown of OHSS. On November 30, 1987, staff from OSW sent Tony Brown as well as other members of OHSS a copy of a memo which documents apparent building related illnesses experienced by OSW employees in Room 2627.

The result of this documentation was that no action was taken and OHSS representatives, including Tony Brown, flatly denied ever receiving any complaints or memo on this subject. Hundreds of complaints have been articulated to OHSS over the past two years regarding poor indoor air quality at Waterside Mall. OHSS has not responded to any of these complaints until:

1) several OSW employees experienced <u>severe</u> reactions to toxic chemicals which are being circulated in the ventilation system, and

2) two articles appeared in the Washington Times which explained the indoor air problem at Waterside Mall.

The resulting reaction by OHSS was to merely discontinue laying new carpet at Waterside Mall "for the time being."

I believe that such irresponsible and negligent behavior on the part of OHSS is intolerable and has caused much suffering by EPA employees. I would suggest that the federal program office of OSHA be called in to oversee and evaluate the competency of OHSS to carry out their mission.

In summary, I would suggest that the following be done in an attempt to remedy the existing indoor air problem at EPA:

1) all renovation be discontinued at Waterside Mall,

2) air quality and quantity monitoring be continued and standard monitoring protocol be used for all monitoring activities, with work to be performed by an independent party experienced in indoor air investigations,

3) a certified industrial hygienist (CIH) or team of CIHs be hired to investigate this problem,

4) the OSHA Office of Federal Agency Programs be called in to evaluate EPA's Occupational Health and Safety Staff,

5) immediate renovations be made in the ventilation system along at least the 2800 corridor,

6) serious consideration be given to removal of recently, installed carpeting, and

7) serious and immediate determination be made as to whether certain employees are at exceptional risk (e.g., females taking estrogen), with a corresponding decision on whether such persons should be temporarily excused from attendance in the Mall.

I would be pleased to provide further information as needed.

cc: Kent Anderson
Bob Dellinger
Jim O'Leary
Mike Flynn
Joanne Bahura

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AUG 4 1988

MEMORANDUM

SUBJECT: Petition on Ventilation

FROM: Myra Cypser, OAR Myra Cypser

Mark Antell, OAR

Vanessa Musgrave, OSWER Vanessa Musgrave

TO: Lee M. Thomas
Administrator

Attached is a petition to you signed by 567 employees. It asks you to "provide a healthy indoor environment for EPA employees and to establish a comprehensive indoor air program for all the Headquarters buildings that can be a model for the entire country". Note that 19 employees wrote that they disagreed with a portion of the petition but signed anyway.

Employees continue to be concerned about indoor air/ventilation issues in Headquarters buildings. We hope that you will give this matter further attention. We would be happy to meet with you to discuss the petition and we look forward to seeing your response to it.

VENTILATION PETITION

We petition the Administrator to provide a healthy indoor environment for EPA employees and to establish a comprehensive indoor air program for all the Headquarters buildings that can be a model for the entire country. Specifically, we ask the Administrator to:

Ensure comfortable temperature and humidity levels for EPA offices.

Ensure adequate fresh air and distribution of air.

Determine what pollution sources are in the building and monitor pollution levels.

Remove the newly installed carpet and find alternatives to installing more of this problem carpet.

Help employees who have sick building symptoms receive compensation.

Conduct an in-depth health survey to locate employees with sick building symptoms.

Consult with employees and keep them informed of the Agency's progress in addressing ventilation issues on a regular basis.

This petition has been endorsed by the National Federation of Federal Employees.

SIGNATURE	PRINT NAME	DATE	ROOM #	COMMENTS

return to: Myra Cypser, room 3201F

TESTIMONY OF
BOBBIE LIVELY-DIEBOLD
BEFORE THE
UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON NATURAL RESOURCES,
AGRICULTURE RESEARCH, AND ENVIRONMENT
JULY 20, 1989
ON THE
INDOOR AIR QUALITY ACT OF 1989 (H.R. 1530)

MY NAME IS BOBBIE LIVELY-DIEBOLD. I AM EMPLOYED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY IN WASHINGTON, D.C. I AM APPEARING HERE TODAY NOT ON BEHALF OF MY AGENCY, BUT BECAUSE I AM AMONG THOSE WHOSE HEALTH AND LIFE HAS BEEN RADICALLY AFFECTED BY THE INDOOR AIR AT EPA HEADQUARTERS. MY TESTIMONY INCLUDES INFORMATION PRESENTED BY MY COLLEAGUE, STEVE SHAPIRO, BEFORE THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS IN MAY.

LONGSTANDING PROBLEMS RELATING TO THE AIR QUALITY AT WATERSIDE MALL, EPA'S CENTRAL HEADQUARTERS SITE, CAME TO A HEAD LAST YEAR WHEN CLUSTERS OF PEOPLE IN SEVERAL LOCATIONS WHERE NEW CARPET HAD BEEN LAID BECAME ILL. WHEN THIS WAS REPORTED TO EPA FACILITIES MANAGEMENT AT THE BEGINNING OF 1988, NO ACTION OF ANY TYPE WAS TAKEN TO IDENTIFY AND REMOVE THE SUSPECTED SOURCES OF POLLUTION. BUILDING RENOVATIONS CONTINUED AND ADDITIONAL EMPLOYEES BECAME ILL. WITHIN ONE BRANCH IN A DIVISION OF THE OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE (OSWER), EIGHT OUT OF 25 PEOPLE WERE AFFECTED. FOUR HAD TO STOP WORKING AT THE BUILDING AND FOUR HAD SIGNIFICANT HEALTH PROBLEMS BUT CONTINUED TO WORK INSIDE. IN ANOTHER DIVISION OF OSWER WITH ABOUT 52 PEOPLE, AT LEAST NINE WERE AFFECTED, FIVE SEVERELY, ONE SOMEWHAT LESS, AND AT LEAST THREE HAD SIGNIFICANT HEALTH PROBLEMS.

BY MAY, THERE WERE SEVEN OF US IN THE MALL AND EAST TOWER AREAS WHO HAD BECOME SO SEVERELY AFFECTED THAT OUR DOCTORS ADVISED US TO TRY TO ARRANGE WORKING OUT OF OUR HOMES OR AT SOME OTHER LOCATION. A LARGER GROUP OF PEOPLE WHO WERE NOT QUITE AS SEVERELY AFFECTED STRUGGLED TO CONTINUE TO WORK INSIDE THE BUILDING. NONE OF THE SUSPECTED SOURCES OF THIS OUTBREAK OF ILLNESS, INCLUDING THE NEW CARPETING, WAS EVER REMOVED. SUBSEQUENTLY, AT LEAST SEVEN OTHERS HAVE HAD TO STOP WORKING AT WATERSIDE.

PROGRAM MANAGERS, PEOPLE SICK FROM INDOOR AIR, AND VARIOUS HEALTH PROFESSIONALS, AND UNION OFFICIALS HAVE HAD A GENERALLY FRUSTRATING TIME GETTING EPA TO ACT RESPONSIBLY, RESPONSIVELY, AND COMPETENTLY.

IT IS IRONIC THAT, IN RESPONSE TO PREVIOUS INCIDENTS OF ILLNESS RELATED TO NEW CARPET, EPA A FEW MONTHS EARLIER INCLUDED IN ITS EXCELLENT INTERNAL INDOOR AIR POLICY (APPENDIX II) PROVISIONS FOR PREVENTING JUST SUCH AN OUTBREAK.

> Employees will not be exposed to chemicals at levels known to be toxic or acutely irritating to the eyes, nose, or throat or cause other physical ills to employees...
>
> New carpeting shall be shampooed before the space is occupied unless it has been properly aired out or has been shown to not emit chemicals which cause health reactions to occupants. If vapors from carpeting or

furniture result in a health reaction, the affected employees should be allowed to work at a temporary location until the problem is solved...

I BELIEVE THAT IF EPA'S ADMINISTRATIVE MANAGEMENT HAD INITIALLY TAKEN THE PROBLEM SERIOUSLY AND TAKEN IMMEDIATE ACTION UNDER THE TERMS OF ITS OWN INDOOR AIR POLICY, WE COULD HAVE BEEN SPARED THE TRAUMA AND DISTRESS OF THIS ILLNESS.

THE OVERALL AIR QUALITY PROBLEMS AT WATERSIDE ARE MANY AND COMPLEX. EVEN WITH THE MANY RESOURCES AT ITS COMMAND, EPA HAS AT BEST HAD A DIFFICULT TIME TRYING TO DEAL WITH THESE PROBLEMS AND WITH THE EPIDEMIC IN THE BUILDING OVER THE PAST YEAR. WHEN EPA RECENTLY ATTEMPTED TO CONDUCT AN AIR MONITORING SURVEY, THE BUILDING OWNER REPORTEDLY INCREASED THE VENTILATION RATES BY A FACTOR OF TWO OR THREE DURING THE TIME OF THE SURVEY.

WE HAVE YET TO LEARN THE NUMBER OF PEOPLE WHOSE HEALTH HAS BEEN AFFECTED BY RENOVATIONS DONE AT WATERSIDE OVER THE PAST YEAR AND A HALF, BUT MINIMUM NUMBERS INCLUDE:

- AT LEAST 5 EPA EMPLOYEES WHO HAVE LEFT EPA FOR HEALTH REASONS ARISING FROM INDOOR AIR POLLUTION

- AT LEAST ELEVEN EPA EMPLOYEES WHO ARE AT HOME OR IN ALTERNATIVE WORK SPACE

- OVER 100 EPA EMPLOYEES WHO HAVE GONE TO THE HEALTH UNIT OVER EFFECTS FROM INDOOR AIR POLLUTION

- 76 EPA EMPLOYEES WHO REPORTED ILLNESS TO THE AGENCY'S HEALTH AND SAFETY INVESTIGATOR AT THE HEIGHT OF THE CARPET CRISIS

BUT THIS IS JUST THE TIP OF THE ICEBERG. THERE ARE THOSE WHO ARE NOT AWARE THAT IT IS THE INDOOR AIR AT EPA THAT IS AFFECTING THEIR HEALTH AND PRODUCTIVITY. THROUGHOUT THE WORK WEEK THESE PEOPLE POP SUDAFEDS AND GO THROUGH A BOX OF KLEENEX. THERE ARE A GOOD MANY WHOSE HEALTH AND PRODUCTIVITY HAD BEEN AFFECTED FOR A TIME OR STILL ARE AFFECTED, BUT NOT TO THE EXTENT THAT THEY WERE COMPELLED TO STAY OUT OF WATERSIDE. THERE ARE THOSE WHO HAVE LEFT EPA WITHOUT FORMALLY REPORTING THAT THEY LEFT DUE TO ILLNESS. SOME FOUND UPON LEAVING THE BUILDING THAT THEIR HEALTH PROBLEMS DISAPPEARED. AND FOR ALL THE ABOVE SITUATIONS, THERE ARE NUMEROUS CONTRACT EMPLOYEES, RETIREES WORKING FOR EPA THROUGH THE AMERICAN ASSOCIATION OF RETIRED PERSONS, STAY-IN-SCHOOLS (HIGH SCHOOL AND COLLEGE STUDENTS), CONTRACT BUILDING SERVICE AND SECURITY STAFF, AND THE WORKERS LAYING THE CARPET WHO HAVE NEVER EVEN BEEN COUNTED.

THE RANGE OF BUILDING-RELATED SYMPTOMS INCLUDES A VARIETY OF MODERATE AND ACUTE RESPIRATORY PROBLEMS; HEADACHE; SORE THROAT; BURNING EYES, LUNGS, AND SKIN; RASHES; FATIGUE; LARYNGITIS; CLUMSINESS; DISORIENTATION; LOSS OF BALANCE; NAUSEA; NUMBNESS IN EXTREMITIES AND FACE; AND DIFFICULTY WITH MENTAL TASKS. REPRODUCTIVE EFFECTS ARE A CONCERN AS WELL. THE OCCUPATIONAL HEALTH PHYSICIANS SOME OF US HAVE SEEN SAY THE MOST COMMON PROBLEMS INCLUDE UPPER AND LOWER RESPIRATORY IRRITATION, INTOXICATION-TYPE SYNDROME, OCCUPATIONAL ASTHMA, AND CHRONIC HYPERSENSITIVITY PNEUMONITIS. THE EFFECTS ON THE CENTRAL NERVOUS SYSTEM EXPERIENCED BY MANY OF US DON'T LEND

THEMSELVES TO READY DIAGNOSIS. SOME OF THE PEOPLE WHO HAVE BEEN AFFECTED, BUT NOT TO THE POINT WHERE THEY HAVE BEEN COMPELLED TO LEAVE THE BUILDING, EITHER SEE NO PHYSICIAN AT ALL OR SEE A FAMILY

DOCTOR OR ALLERGIST WHO IS NOT FAMILIAR WITH OCCUPATIONAL OR ENVIRONMENTAL HEALTH.

SOME ARE ABLE TO FUNCTION IN MOST BUILDINGS OTHER THAN WATERSIDE. SOME HAVE NO PROBLEMS VISITING HAZARDOUS WASTE SITES FOR A WEEK AT A TIME, BUT BECOME ILL AFTER 15 MINUTES INSIDE WATERSIDE. OTHERS HAVE BECOME PROGRESSIVELY REACTIVE TO TRACE AMOUNTS OF THE MYRIAD VOLATILE ORGANIC COMPOUNDS IN OUR ENVIRONMENT WHICH MOST PEOPLE TAKE FOR GRANTED. THERE ARE THOSE WHO SUFFER WHEN EXPOSED TO THE PRESUMED BIOLOGICAL AGENTS IN THE AIR AT WATERSIDE, WHEN EXPOSED TO AREAS THAT WERE RENOVATED OR CARPETED DURING THE LAST FEW YEARS, OR WHEN THE VENTILATION SYSTEM IS NOT OPERATING NORMALLY OR NOT OPERATING AT ALL -- BUT WHO RECOVER OVER TIME.

APPENDIX I CONTAINS PERSONAL HISTORIES REPRESENTATIVE OF THOSE PEOPLE WHOSE HEALTH AND LIVES HAVE BEEN AFFECTED BY THE AIR QUALITY AT EPA HEADQUARTERS.

WHAT HAPPENED TO US

THERE ARE PEOPLE WITH ALLERGIES WHO MAY BE AT SPECIAL RISK TO INDOOR AIR QUALITY PROBLEMS, AND THIS RISK SHOULD BE CONSIDERED IN THE FORMULATION OF INDOOR AIR QUALITY STANDARDS. BUT ILLNESS FROM INDOOR AIR DOES NOT RESPECT AGE OR HEALTH. MOST OF US WHO CAN NO LONGER

WORK INSIDE WATERSIDE HAVE NOT HAD A HISTORY OF ALLERGIES. OUR GROUP INCLUDES PEOPLE IN THEIR PRIME, IN THEIR TWENTIES, EX-JOGGERS, AN EX-MARATHON RUNNER, A KARATE BLACK BELT, AND OTHERS WHO WERE IN

GOOD HEALTH BEFORE THEY WERE AFFECTED. THERE ARE INDIVIDUAL CHEMICALS OR COMBINATIONS OF CHEMICALS FOUND IN OFFICES AND OFFICE BUILDINGS - NOT ALL NECESSARILY COME FROM CARPET AND RENOVATION MATERIALS - WHICH CAN APPARENTLY PRODUCE SHORT- AND LONG-TERM HEALTH EFFECTS. ALTHOUGH OUR ILLNESS WAS PREVENTABLE, NONE OF US, EXCEPT FOR SOME OF THOSE WHO HAVE BECOME ILL THIS YEAR, WERE WARNED.

WHEN YOU FIRST FEEL ILL, YOU TRY TO DENY IT BECAUSE YOU DON'T WANT TO INTERRUPT YOUR WORK AND YOUR HOME LIFE. YOU WONDER WHAT KIND OF BUG YOU HAVE - SOME OF US THOUGHT WE MIGHT HAVE HAD MONO, AIDS, OR LYME DISEASE. SOME OF THOSE AFFECTED REACHED A TURNING POINT WHERE THEY IMPROVED OR THEY STABILIZED TO WHERE THEY COULD FUNCTION AT A REDUCED LEVEL INSIDE WATERSIDE. OTHERS GOT WORSE. MOST OF US WHO CAN NO LONGER GO INTO WATERSIDE, HAVE NOT BECOME LESS REACTIVE. SOME HAVE BECOME PROGRESSIVELY MORE REACTIVE. I'M SPEAKING OF REACTIONS TO PARTS PER MILLION, BILLION, OR EVEN TRILLION OF SUBSTANCES OR COMBINATIONS OF SUBSTANCES WHERE REACTIONS ARE NORMALLY ASSOCIATED WITH PARTS PER THOUSAND.

HOME LIFE AND OTHER ACTIVITIES. IS IT SENSIBLE TO IGNORE THE SYMPTOMS - YOU OFTEN REACT IN BUILDINGS TO THINGS YOU CAN'T EVEN SMELL OR YOU SMELL BUT DON'T RECOGNIZE - AND ENDURE THE PHYSICAL MISERY AND TEMPORARY MENTAL DYSFUNCTION? OR IS IT SENSIBLE TO DROP OUT OF YOUR LIFE AND LIVE AS A RECLUSE AT HOME OR IN A REMOTE AREA TO AVOID THE VOLATILE CHEMICALS OF THE 20TH CENTURY? THERE ARE NO GOOD ANSWERS TO THIS DILEMMA.

SUBSEQUENT DEVELOPMENTS

WHEN THE CARPET CRISIS BROKE IN MAY 1988, A DIVISION OF THE OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE HAD BEEN SCHEDULED TO MOVE INTO NEWLY-RENOVATED SPACE IN THE MALL AREA. THE MOVE WAS HELD UP PENDING AN EPA MANAGEMENT DECISION ON THE PROBLEM BATCH OF CARPET. THAT SUMMER, EPA'S ADMINISTRATIVE MANAGEMENT DECIDED TO GO AHEAD WITH THE OSWER MOVE ON A VOLUNTARY BASIS. EMPLOYEES WERE ANXIOUS TO LEAVE THEIR LOW-CEILING, OVERCROWDED, TEMPORARY OFFICES. THESE TEMPORARY OFFICES HAD ASBESTOS CRUMBLING FROM THE CEILINGS AND WERE INFESTED WITH MICE AND ROACHES. UNDER THESE CIRCUMSTANCES, MOST ELECTED TO TAKE THEIR CHANCES IN THE NEWLY-CARPETED SPACE. THE VACATED TEMPORARY WORK SPACE WAS THEN REMODELLED DURING WORKING HOURS IN SUCH A MANNER THAT FOR SEVERAL WEEKS ASBESTOS FELL ON EMPLOYEES REMAINING IN THAT SECTION OF THE BUILDING. SEVERAL PEOPLE BROKE OUT WITH SEVERE SKIN RASHES FROM THE ADHESIVE USED IN LAYING FLOOR TILE.

THE IRONY THAT SERIOUS INDOOR AIR QUALITY PROBLEMS HIT EPA HEADQUARTERS OF ALL PLACES IS LOST ON FEW PEOPLE. WHAT IS DOUBLY IRONIC IS THAT THERE HAVE BEEN REPEATED INDOOR AIR QUALITY PROBLEMS EXPERIENCED WITHIN THE DIVISION RESPONSIBLE FOR EPA'S INTERNAL ENVIRONMENTAL HEALTH AND SAFETY. WHEN THIS AGENCY PROGRAM MOVED OUT OF WATERSIDE TO THE HEADQUARTERS FACILITY IN THE FAIRCHILD BUILDING IN SUMMER 1987, SOME STAFF DEVELOPED RESPIRATORY AND OTHER PROBLEMS THEY ASSOCIATED WITH NEW CARPET IN THE BUILDING. THEN THIS PAST APRIL, THIS DIVISION MOVED BACK TO WATERSIDE, AGAIN INTO NEWLY-RENOVATED SPACE. AGAIN, MANY PEOPLE IN THIS DIVISION HAVE DEVELOPED RESPIRATORY SYMPTOMS. ONE PERSON WHO HAS DEVELOPED PROBLEMS WITH BREATHING HAS DECIDED TO STICK IT OUT IN HER NEW OFFICE. ANOTHER PERSON WHOSE SKIN BROKE OUT IN RED SPLOTCHES WHENEVER SHE ENTERED HER DIVISION'S NEW SPACE WAS RELOCATED TO AN OFFICE REMOVED FROM HER DIVISION. SHE HAS SINCE LEFT EPA.

IN APRIL 1988, EPA IMPOSED A MORATORIUM AT HEADQUARTERS ON FURTHER LAYING OF THE BATCH OF CARPET ASSOCIATED WITH THE OUTBREAK OF ILLNESS. BUT THIS PAST WINTER EPA STATED THAT IT WOULD INSTALL SOME OF THE REMAINING CARPET AT EPA'S LABS IN EDISON, NEW JERSEY, AND RESEARCH TRIANGLE PARK, NORTH CAROLINA.

THIS PAST APRIL, THE BUILDING OWNER AT WATERSIDE ALLOWED ANOTHER TENANT, THE GENERAL ACCOUNTING OFFICE, TO INSTALL NEW CARPET BELIEVED TO EMIT "4-PC", A STYRENE SUBSTANCE SUSPECTED IN THE OUTBREAK OF ILLNESS AT EPA. VAPORS FROM THIS CARPET GO INTO EPA'S HALLWAYS. EMPLOYEES ARE CONCERNED, BUT EPA SAYS THIS IS A MATTER BEYOND ITS JURISDICTION.

VARIOUS STUDIES RELATING TO THE CARPET AND INDOOR AIR QUALITY AT EPA HEADQUARTERS HAVE BEEN INITIATED. A MODIFICATION IS PLANNED TO THE AIR SYSTEM IN THE LIBRARY AREA, ALTHOUGH EPA'S OFFICE OF ADMINISTRATION REPORTED THAT THIS QUARTER OF A MILLION DOLLAR PROJECT WAS DESIGNED WITHOUT CONSIDERATION OF AIR QUALITY STANDARDS.

DESPITE THE POOR AIR QUALITY AT WATERSIDE AND CONTINUING INCIDENCES OF EMPLOYEES BECOMING ILL, THE OFFICE OF ADMINISTRATION ANNOUNCED ON MAY 23 THAT BUILDING RENOVATIONS WOULD BE DONE DURING NORMAL WORK HOURS IN ORDER TO CONTAIN COSTS. EMPLOYEES WERE INCREDULOUS. THE UNIONS RESPONDED WITH A REQUEST TO BARGAIN OVER THIS ISSUE. THE OFFICE OF ADMINISTRATION HAS AGREED TO BARGAIN, BUT REITERATED TWO WEEKS AGO THAT IT STILL PLANNED TO CONDUCT SOME RENOVATION ACTIVITIES INVOLVING THE RELEASE OF TOXICS DURING NORMAL WORK HOURS.

ON JUNE 16, THERE WAS A RELEASE OF XYLENE FUMES IN THE EAST TOWER WHEN A CONTRACTOR APPLIED A SEALANT CONTAINING XYLENE ON THE ROOF NEAR AN AIR INTAKE DAMPER. THE OFFICE OF ADMINISTRATION REPORTED THAT SEVEN EMPLOYEES BECAME VISIBLY ILL. AT LEAST ONE OF THESE PERSONS HAS HAD SERIOUS CONTINUING PROBLEMS INSIDE THE BUILDING EVER SINCE. STAFF FROM THE AGENCY'S INTERNAL ENVIRONMENTAL HEALTH AND SAFETY DIVISION RESPONDED TO THIS INCIDENT BY GOING AROUND THE EAST TOWER WITHOUT RESPIRATORY PROTECTION OR SAMPLING/ANALYTICAL EQUIPMENT, SNIFFING WITH THEIR NOSES TO TRACK DOWN THE FUMES. OTHER STAFF FROM ENVIRONMENTAL HEALTH AND SAFETY WERE ABLE TO OBTAIN A MATERIAL SAFETY DATA SHEET WITHIN AN HOUR AND A HALF, WHICH IDENTIFIED THE FUMES AS XYLENE. THE OFFICE OF

ADMINISTRATION REPORTED THAT WITHIN FOUR HOURS IT WAS ABLE TO COME TO A DECISION ABOUT THE XYLENE, WHICH WAS NOT TO EVACUATE THE EAST TOWER.

A GROUP OF SERIOUSLY AFFECTED EMPLOYEES REQUESTED LAST MARCH TO MEET WITH THE AGENCY'S TOP ADMINISTRATIVE MANAGEMENT TO DISCUSS ENSURING COMPETENT, RESPONSIBLE, AND RESPONSIVE MANAGEMENT FOR DEALING WITH THE MANY PROBLEMS ARISING FROM INDOOR AIR POLLUTION AT HEADQUARTERS. THE ADMINISTRATION NEVER RESPONDED TO THIS REQUEST.

THE PRESSING AIR QUALITY PROBLEMS AT HEADQUARTERS ARE FAR FROM BEING MASTERED. IT WILL TAKE COMMITTED ACTION ON THE PART OF THE ADMINISTRATION TO ENABLE THE REINTEGRATION INTO WATERSIDE OF AFFECTED EMPLOYEES WHO HAD TO STOP WORKING INSIDE THE BUILDING. LAST WEEK, WE WROTE TO THE NEW ADMINISTRATOR ABOUT THE CONTINUING PROBLEMS ARISING FROM AIR QUALITY AT HEADQUARTERS AND ASKED THAT HE DESIGNATE A PERSON IN HIS IMMEDIATE OFFICE TO TAKE CHARGE.

APPENDIX III CONTAINS A MEMORANDUM FROM WITHIN EPA'S INDOOR AIR DIVISION DOCUMENTING SOME OF THE LONGSTANDING PROBLEMS WITH THE HEADQUARTERS VENTILATION SYSTEM STILL AWAITING SOLUTION BY EPA'S ADMINISTRATIVE MANAGEMENT. THIS REPORT COMES OUT OF A BROADER EFFORT TO CHARACTERIZE THE DESIGN AND OPERATIONAL PROBLEMS WITH THE VENTILATION SYSTEM AT WATERSIDE.

SOME OF THOSE MOST AFFECTED BY THESE ILLNESSES ARE AT HOME. SOME ARE WITHOUT WORK. APPROXIMATELY TEN PEOPLE HAVE BEEN RELOCATED SINCE NOVEMBER TO WORK SPACE IN AN APARTMENT BUILDING

THE LONG ROAD OF DECISION-MAKING

WHEN SOMEONE WHO WORKS AT EPA COMES TO UNDERSTAND THAT HE OR SHE IS BECOMING ILL FROM EXPOSURE TO A CHEMICAL OR A COMBINATION OF CHEMICALS IN THE AIR, WORKER, SUPERVISORS, MANAGEMENT, AND TREATING PHYSICIANS MAY EMBARK ON A LONG ROAD OF DECISION-MAKING. AS A WORKER, YOU HAVE TO CHOOSE WHETHER TO TOUGH-OUT FEELING SICK IN THE HOPE THAT IT WILL PASS, ALTHOUGH NOT ATTENDING TO YOUR ILLNESS MAY RESULT IN WORSE ILLNESS; OR TRY TO TAKE CARE OF YOURSELF, ALTHOUGH THIS MAY RESULT IN DISRUPTIONS TO YOUR WORK AND ULTIMATELY YOUR CAREER, YOUR ORGANIZATION, YOUR PERSONAL WELFARE, AND YOUR FAMILY'S WELFARE. A COMMON CHOICE IS TO DENY THAT YOU SHOULD DO ANYTHING ABOUT THE PROBLEM.

SUPERVISORS FACE ISSUES OF HOW TO KEEP A WORKER INTEGRATED IN THE ORGANIZATION. VARIOUS SUPERVISORS HAVE SAID THEY ARE AT A LOSS OVER WHAT TO DO WITH SOMEONE WHO IS UNABLE TO WORK AT FULL CAPACITY OR WHO CAN'T COME INTO THE OFFICE, ATTEND MEETINGS, AND WORK WITH OFFICE DOCUMENTS AND EQUIPMENT. WHAT ARE A SECRETARY AND SUPERVISOR TO DO WHEN THE SECRETARY CAN'T BE IN THE OFFICE TO HANDLE PAPERWORK AND TELEPHONES AND HELP OTHERS AS NEEDED?

WHEN SOMEONE CAN'T BE ON LOCATION TO CONTRIBUTE TO A PROJECT, YOU CAN TRY WAYS TO GET AROUND THIS WITH TELECOMMUNICATIONS - SPEAKER PHONES, FAXING, AND MODEMS - BUT OFTEN THIS IS INCONVENIENT, INEFFICIENT, DISRUPTIVE, OR UNWORKABLE.

YOU GO TO A DOCTOR FOR ADVICE AND BOTH OF YOU ARE FACED WITH A DILEMMA: DO YOU CONTINUE AT WORK AND RISK GETTING SICKER WITH AN ILL-DEFINED ILLNESS THAT NO ONE UNDERSTANDS? DO YOU WITHDRAW FROM THE WORKPLACE AND STOP GOING TO OTHER PLACES WHERE LOW EXPOSURES CAN AFFECT YOU, IN THE HOPE THAT YOU MIGHT RECOVER FROM BOTH THE EFFECTS OF THE SICKNESS AND FROM THE GENERAL CONDITION? THERE IS NO WAY TO PREDICT WHETHER OVER TIME YOU WILL RECOVER FROM THIS CONDITION. DO YOU GIVE UP YOUR JOB TO TRY OUT ANOTHER WORKPLACE ON A GAMBLE THAT IT TOO WON'T CAUSE YOU TO BE SICK? DO YOU AVOID GOING TO NEW PLACES BECAUSE THE AIR MIGHT MAKE YOU SICK?

WE EXCHANGE EXPERIENCES AMONG OURSELVES ABOUT OTHER OFFICE BUILDINGS, HOTELS, STORES, MALLS, INDOOR MARKETS, SCHOOLS, DOCTOR'S OFFICES, HOSPITALS AND CLINICS, RESTAURANTS, PLACES OF WORSHIP, GREENHOUSES, AND OTHER PLACES THAT AFFECT US TO MINIMIZE THE RUSSIAN ROULETTE EFFECT ON US OF BREATHING INDOOR AIR. THIS IS SOMEWHAT HELPFUL, BUT WE ALL DON'T REACT TO THE SAME THINGS, TO THE SAME DEGREE, OR AT THE SAME RATE.

OUR LIVES ARE FULL OF SURPRISES. YOU WALK INTO A PLACE YOU THOUGHT SAFE, ONLY TO BE CAUGHT IN FUMES FROM PAINT, CLEANING AGENTS, PERFUME, NAIL POLISH, CIGARETTE SMOKE, COMMON TOLUENE/XYLENE MAGIC MARKERS, WHITE-OUT, NEW FURNITURE, ELECTRONIC EQUIPMENT AND JET INK PRINTERS, PLASTIC OBJECTS, PLASTIC WRAPPING, GLUE, MASTICS - THE LIST NEVER ENDS.

WHEN YOU GET A REACTION, THE EFFECTS ARE OFTEN NOT CONFINED TO WORK. THEY CAN STAY WITH YOU FOR DAYS OR WEEKS, AFFECTING YOUR

NEAR THE EAST TOWER. OTHERS HAVE LEFT THEIR PROGRAMS AND EVEN THEIR CAREERS AT EPA. THOSE AFFECTED MOST SEVERELY INCLUDE SECRETARIES, PROFESSIONAL STAFF, AND SECTION AND BRANCH CHIEFS. AS A GROUP, SUPERVISORS WHO ARE AFFECTED SEEM MOST RELUCTANT OF ALL TO BE IDENTIFIED AS HAVING THESE PROBLEMS, BELIEVING THAT THIS CAN BE HIGHLY DETRIMENTAL TO THEIR CAREERS AS MANAGERS. THE PERSONAL HISTORIES IN APPENDIX I DOCUMENT SOME OF THE TRAUMA AND TURMOIL THESE ILLNESSES HAVE CAUSED IN OUR VOCATIONAL AND PERSONAL LIVES.

PERSONAL EXPERIENCES OF BOBBIE LIVELY-DIEBOLD

As the result of my personal commitment to the preservation of the natural and human environment, I identified the Environmental Protection Agency (EPA) as the place where my career efforts would be most effective. To me, employment by EPA was not just a job but the focus of my social concern. I pursued my career at EPA for eleven years both in Region V in Chicago, Illinois and at Headquarters in Washington, D.C. Although I experienced success in achieving protection of the environment, EPA was not successful in protecting me from its environment. As the result of having to perform my job in unsafe conditions, my health has been damaged, perhaps irreparably, my career potential has been destroyed, my life choices compressed to a very small sphere. I have been socially isolated, my ability to earn a living taken out of my control and I am dependent upon the decisions of the Department of Labor for income and payment of medical expenses. By August of this year I will no longer have a job. The Agency responsible for my condition may choose to no longer have any obligation toward making accommodations for my problem.

Exposures to indoor air pollution in poorly ventilated buildings such as Waterside Mall have turned a healthy, athletic person who jogged twenty miles a week, lifted weights and did aerobics into a person of limited activity. I can no longer jog due to lung pain and have difficulty breathing while doing light exercise or when exposed to low to moderate levels of

pollutants. In addition, I now react to products that are in common use, such as cleaning supplies, perfumed products, paints, solvents, petroleum-based compounds, cigarettes, and chemicals found on fabrics, such as formaldehyde. To achieve the clean environmental conditions I require to be reasonably comfortable and free from pain and reactions, I spend most of my time in a stripped room with two air filters and limit my excursions from home. I must wear a respirator to travel in a car and in buildings where I cannot avoid exposures. Every trip outside my home must be planned to avoid or limit exposures. These trips are spaced to keep my immune system from being overloaded. I avoid malls and shop mostly by catalog. I have very little social life since restaurants, theaters, and homes of friends often have intolerable levels of pollutants. My husband, a PhD. physicist must do the housework and assume many of my former responsibilities.

I have not been able to travel to see my children or to participate in milestone occasions in their lives. My grandson was almost two years old before I saw him. I must read the newspaper outdoors and wash my hands after each section to prevent becoming ill. All new magazines, books and certain photocopied documents must be aired out to allow solvents to off-gas before I can read them.

One of the most distressing consequences of my exposure is the change from being considered a valued, effective employee into one that is written off as "damaged goods", and considered unable to "do the job". Some supervisors are at a loss on how to keep employees integrated into the organization while others do not even try. I face the dual problems of being unable to find a location where I can perform a job while protecting my health and also finding an employer without prejudice against a person with my health handicap.

My problems are the direct result of my exposures in EPA over two periods. The first was on January 20, 1988 and intermittently over the next several weeks. I experienced loss of voice, burning of my face, difficulty breathing, dizziness, loss of memory, mental confusion, facial rashes, and loss of ability to concentrate. After five weeks out of the building most symptoms disappeared. My doctor allowed me to return to work with the restrictions that I must be placed in an area without on-going renovations such as painting and carpet installation and with fresh air intake and ventilation that would meet standards established by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). I returned to work at the end of March, 1988 and was told that there was not an area within Waterside Mall that would meet ASHRAE standards. I had to work in an area where the rest of my section had been moved while our original area was remodeled. Although my supervisor assigned me tasks out of the building whenever possible, I again experienced reactions that escalated in severity. Within ten days after my return to work, all my symptoms, including neurological problems had returned. On

RECOMMENDATIONS

THE BILL YOU ARE CONSIDERING IS A GOOD ONE. WHAT FOLLOWS ARE RECOMMENDATIONS FOR EMPHASIS OR INCLUSION.

INDOOR AIR QUALITY

THERE IS A NEED FOR BETTER UNDERSTANDING OF THE RANGE OF INDOOR AIR CHEMICALS THAT CAN AFFECT PEOPLE, ESPECIALLY CHEMICALS IN COMBINATIONS, RATHER THAN JUST SINGLE CHEMICALS.

ALGORITHMS. PEOPLE WHO RUN BUILDINGS NEED TO BE TRAINED IN THE RUDIMENTS OF PUBLIC HEALTH AND NEED ALGORITHMS TO EVALUATE A BUILDING AND TO EVALUATE PROBLEM AREAS WITHIN A BUILDING.

AIR QUALITY STANDARDS. CONSENSUS STANDARDS FOR ACCEPTABLE INDOOR AIR QUALITY, SUCH AS ASHRAE, SHOULD BE REEVALUATED TO ACCOUNT FOR BUILDING RENOVATIONS, CARPETING, ELECTRONIC EQUIPMENT, AND BIOLOGICAL AGENTS; AND ADDRESS AIR QUALITY FOR ALL PERSONS - HEALTHY, SICK, ALLERGIC, AND CHEMICALLY HYPERSENSITIVE.

BUILDING CODES. BUILDING CODES SHOULD BE DEVELOPED TO INTEGRATE GOOD INDOOR AIR QUALITY PRINCIPLES.

INDOOR AIR QUALITY AUTHORITY

AN INDOOR AIR QUALITY CERTIFICATION AUTHORITY SHOULD BE CREATED, SO THAT BUILDING BUYERS, RENTERS, OCCUPANTS, AND VISITORS CAN HAVE STANDARDIZED SITE-SPECIFIC INFORMATION ABOUT THE QUALITY OF AIR INSIDE PUBLIC, COMMERCIAL AND MULTI-TENANT RESIDENTIAL BUILDINGS.

IDENTIFYING HAZARDS

TESTING. MANUFACTURERS OF CONSUMER PRODUCTS, SUCH AS BUILDING AND OFFICE PRODUCTS AND COSMETICS, CONTAINING VOLATILE ORGANIC MATERIALS, SHOULD TEST THESE MATERIALS UNDER A PROTOCOL INCORPORATING WORST-CASE CONDITIONS, SUCH AS IN AN UNVENTILATED CUBBYHOLE OFFICE. THIS WOULD BE COMPARABLE TO THE WAY BRIDGES ARE DESIGNED. RESULTS OF TESTS SHOULD BE ON FILE WITH EPA.

LABELLING. THE HAZARDS OF CHEMICALS USED IN BUILDING CONSTRUCTION AND RENOVATION AND MAINTENANCE, FURNISHINGS, OFFICE EQUIPMENT AND SUPPLIES, AND PERSONAL ITEMS SUCH AS NAIL POLISH, PERFUME/COLOGNE SHOULD BE LABELLED. PRODUCTS CONTAINING VOLATILE ORGANIC MATERIALS AND CARCINOGENS SHOULD LABEL ALL INGREDIENTS IN ORDER OF DECREASING CONCENTRATION. BUILDING MANAGERS, OCCUPANTS, AND VISITORS HAVE A RIGHT, NEED, AND RESPONSIBILITY TO KNOW AND ADDRESS THESE HAZARDS. INGREDIENT LISTING SHOULD ENCOURAGE REDUCED USE OF HARMFUL MATERIALS.

April 7, 1988 a carpet was installed in an adjacent corridor and I experienced anaphylactic shock that was more severe than in January. I was helped out of the building and on the advice of my doctor, have not reentered since. (Additional details of my exposure are in Appendix I, Personal History #5.) I now have not worked 16 months. Some of my symptoms cleared up after a few months but I began to react to many other low level exposures. It took months for my lung pain and neurological disorientation to become less severe. I was without normal use of my voice for seven months. Extensive speech therapy helped me to regain normal function although I lose my voice upon exposure to various pollutants.

I have not been offered any hope that I will ever return to my former level of health. There is little medical knowledge about the health problems resulting from indoor air pollution. The main medical treatment for my condition is avoidance, although others like myself often take multiple medications. Avoidance measures to protect my health are expensive and have varying degrees of success. For example, the existing fuel oil furnace in my house must be moved outside to prevent my recurrent reactions. It will cost at least seven thousand dollars. I have spent over one thousand dollars on air filters, none of which is covered by insurance. Although avoidance has its cost, the worst impact is not financial but the loss of the ability that most people take for granted - that of living a normal life. How will I be compensated for that loss?

I look normal. My handicap is not visible. But I am not alone. Conditions such as mine are becoming all too common. Presently, no individual is protected from the dangers of indoor air pollution. This could happen to anyone. People are being exposed in Federal agencies as well as the private sector. Visitors from other countries have been affected in our buildings. I have been contacted by people from all over the country with similar problems. I have not been able to resolve their problems nor my own. The problem of indoor air pollution that has adversely affected and continues to affect millions of people requires federal action such as set forth in this bill. Delay in its passage and implementation will increase the toll on people's lives, health, careers and financial livelihood. Delay will also increase costs to business and industry for health care, loss in productivity and disability payments. For these and other reasons in the submitted testimony I support this bill.

RIGHT TO KNOW. ALL NEED TO KNOW WHICH PRODUCTS CONTAIN CHEMICALS WHICH ALONE OR IN COMBINATION CAN MAKE PEOPLE ILL. SPECIAL EFFORT SHOULD BE MADE TO IDENTIFY CHEMICALS OR COMBINATIONS WHICH AT VERY LOW CONCENTRATIONS CAN PRODUCE ADVERSE HEALTH EFFECTS IN HEALTHY PEOPLE, IN CHEMICALLY HYPERSENSITIVE PEOPLE, AND IN CHILDREN. AIR SAMPLING IS A POOR SOLUTION FOR EVALUATING THESE HAZARDS. IT'S EXPENSIVE, IT'S IMPRACTICAL, AND SAMPLING AND ANALYTICAL METHODS FOR MANY CHEMICALS ARE NOT AVAILABLE. IN ADDITION, AIR SAMPLING DOESN'T ADDRESS CHEMICALS ACTING IN COMBINATION.

EPA SHOULD DESIGNATE PRODUCTS TO BE AVOIDED BY PEOPLE WITH CHEMICAL SENSITIVITIES. THIS DESIGNATION SHOULD BE INCLUDED ON PRODUCT LABELS.

BUILDING OCCUPANTS SHOULD BE GIVEN ADVANCE NOTIFICATION OF PESTICIDE USAGE.

CONTROLLING VOLATILES

VOLATILITY LIMITS SHOULD BE SET FOR CONSUMER PRODUCTS USED INDOORS. ADDITIONAL TESTING SHOULD BE REQUIRED FOR PRODUCTS CONTAINING ACUTELY TOXIC SUBSTANCES AND CARCINOGENS, JUST AS RESPONSIBLE MANUFACTURERS ALREADY DO OUT OF LIABILITY CONSIDERATIONS. THE REGULATION OF THESE PRODUCTS SHOULD BE MANDATED UNDER A STATUTORY TIME SCHEDULE.

CHEMICAL HYPERSENSITIVITY

AN INITIATIVE SHOULD BE UNDERTAKEN TO RESEARCH THE CAUSES, NATURE, INCIDENCE, TREATMENT, AND PREVENTION OF CHEMICAL HYPERSENSITIVITY.

BUILDING MANAGEMENT

AIR QUALITY ADVOCATES. PROGRAMS SHOULD BE DEVELOPED TO ESTABLISH AIR QUALITY ADVOCATES IN BUILDINGS. SUCH A PERSON SHOULD HAVE AUTHORITY TO CONTROL WHAT MATERIALS ARE INTRODUCED INTO A BUILDING BY ANYONE, INCLUDING OCCUPANTS AND VISITORS, AND TO DIRECT REMOVAL OF SOURCES OF POLLUTION.

OUTBREAKS OF ILLNESS. CRITERIA SHOULD BE DEVELOPED FOR AN APPROACH TO PREVENT, MONITOR, AND DEAL WITH INCIDENTS OF BUILDING-RELATED SICKNESS. THIS SHOULD INCLUDE MEDICAL TREATMENT, CAREER AND PERSONAL COUNSELLING FOR VICTIMS; AND CRITERIA UNDER WHICH BUILDING OWNERS SHOULD BE REQUIRED TO RESPOND TO PROTECT PEOPLE'S HEALTH.

CRIMINAL PENALTIES SHOULD BE IMPOSED WHEN NEGLIGENT OPERATION OF A BUILDING RESULTS IN SERIOUS BUILDING-RELATED ILLNESS.

HELPING VICTIMS

A FEDERAL PROGRAM SHOULD BE ESTABLISHED TO ADDRESS THE PERSONAL CONDITION OF THOSE WHO BECOME SICK FROM INDOOR AIR. SOME MAY BE IN

A POSITION TO GET COMPENSATION, OTHERS NOT. WHO SHOULD PAY FOR LOSSES OF INCOME AND OTHER EXPENSES AND HOW IS ONE TO RECOVER THESE LOSSES?

SPECIAL ADVOCACY, MEDICAL TREATMENT, FINANCIAL ASSISTANCE, AND VOCATIONAL REHABILITATION PROGRAMS SHOULD BE ESTABLISHED FOR SERIOUSLY AFFECTED PEOPLE. IT WILL BE NICE TO HAVE DEFINITIVE MEDICAL RESEARCH ON BUILDING-RELATED ILLNESSES AND CHEMICAL HYPERSENSITIVITY, BUT WE SHOULD NOT DEFER PROVIDING HELP TO THE GROWING NUMBER WHO ARE SUFFERING FROM THESE PROBLEMS.

BUILDING OCCUPANT BILL OF RIGHTS

A BILL OF RIGHTS SHOULD BE ENACTED FOR ALL BUILDING OCCUPANTS - HEALTHY, ALLERGIC, AND CHEMICALLY HYPERSENSITIVE.

APPENDIX I

PERSONAL HISTORIES

HISTORY #1

I have been experiencing acute health effects including eye irritation, headaches, sore throat, dizziness, difficulty in concentrating, some periodic breathing difficulties, occasional nausea, and some neurological symptoms. I usually experience these symptoms within an hour of arriving at my work space. If I am able to be away from this space for some hours, the symptoms increasingly subside, although not totally. If I am on travel, I do not experience these symptoms at all after I have recovered from being in my space. These acute symptoms first appeared shortly after I moved to this space and have become exacerbated since the renovation of the SE273 suites. I have reported these symptoms to the EPA Health Clinic.

I believe the fact that I am at greater risk than some others in this space may potentially be because of my current health situation; I already have allergies to a number of different common substances. Discussions with those employees who are severely affected indicate that once hypersensitization occurs, it could become irreversible and that the more "minor" symptoms precede major onsets. I have no desire to be a victim of these larger problems.

Chronicle of Past Health Problems

I have become alarmed by reports that Waterside Mall may be a "sick building" and that the area of the Mall we occupy may be worse than other parts of the Mall complex. I have long wondered if the building may be the source of these problems, and if my current problems with the area may be just an acute extension of a problem which has been developing over the last several years, exacerbated by the newly renovated space.

If the "sick building" theory is true, I have a deeper concern than just myself--my son is in day care in the bottom of the West Tower.

I moved to SE226 in January 1983. In mid-June 1983 I developed an intense irritation of the throat and began to get recurrent sinus infections. I went to several doctors who were unable to identify the source of the problem, finally ending with my current physician, who diagnosed the condition as allergic rhinitis, gave me a Rast test to determine allergies to the local ecology, then put me on weekly shots of allergy serum for pollens and inhalants. Before this time, I had never experienced any allergic reactions to even the most universal allergens such as poison ivy.

By mid-1985 my health was deteriorating badly. I was experiencing recurrent colds, sinus infections, coating of my tongue, repetitive gastrointestinal difficulties, and fatigue so severe that, even though it seemed completely impossible that I had contracted AIDS, I had myself tested (negative result).

My health reached a nadir around early-1986. I began visiting a MD/nutritionist at that point, who suggested I be tested for food allergies. I did so and discovered I had become allergic to a number of common food substances such as wheat, members of the nightshade family (white potatoes, bell peppers, eggplant, tomatoes), and a number of other substances. My existing but limited difficulty in processing cow's milk became very severe, including reactions to the amount of cream contained in the small 1/2 & 1/2 creamers used for coffee. I was placed on and still observe a rigid elimination diet, avoiding substances causing reactions. This diet has improved my health markedly, but I have not recovered completely, and may never.

I have also been tested for Epstein-Barr (low-medium titers), and metals. I have had Heidelberg tests, have had my blood tested for imbalances, and have undergone a number of other tests to try to find the source of the problem--all to no avail.

I have consulted my MD/nutritionist and my doctor of internal medicine on these matters and they both tell me I must consider the building as a possible source of these problems.

(May 26, 1988)

Subsequently, I was moved to several different rooms in Waterside as EPA restored the space I was occupying.

I moved out of Waterside in December 1988 and worked at home through February of this year. Since moving into EPA's alternative workspace, I have experienced limited reactions to the new workspace.

HISTORY #2

Following recarpeting at EPA, this person experienced central nervous system and respiratory symptoms, including bronchitis, burning lungs, headaches, dizziness, difficulty concentrating, numbness, and a clinically measurable decrease in nerve conduction velocity. Her physician told her not to reenter Waterside Mall. After leaving the building, she continued to experience these symptoms when exposed to relatively low levels of solvents such as those commonly found in office supplies, paint, home cleaning products.

She tried working at home, but these problems continued with other exposures. She interviewed for another job and did not suffer adverse health effects in the office where she was interviewed. She relocated at her own expense ($4000).

Her new employer has a self-reporting disability procedure. She reported she needed special accommodations, was provided an air filter, and was allowed to crack open a window.

Even with these accommodations, she continued to get sick. Near her desk were two laser printers, a copy machine, and secretaries who used various office supplies, including white-out and carbonless paper. She got headaches almost everyday. There were personal computers throughout the office. She had acute health difficulties when copy machines were being repaired and when she attended meetings where special markers were used on chalkless boards.

After requesting further accommodations, she was repeatedly harassed by management. Her supervisor told her that doctors' letters documenting her condition were not enough to justify accommodations beyond the open window and air filter. The supervisor requested she release her medical records. She did so. She now has a handicap discrimination grievance pending. Her union has backed her up strongly.

Except for dermatitis, she had no previous allergies. She did not develop dermal problems at EPA. She has recently developed various food allergies.

HISTORY #3

I left Maine and began working at EPA, Waterside Mall, in April 1986. I had last been checked for pulmonary function by physicians in Maine. Results indicated normal range of vital capacity and pulmonary function. Good health -- ran marathons until injured in 1984.

I noticed respiratory problems, particularly during that first winter, 1986-1987. I often had flu-like problems, nasal congestion, constant need to clear throat. Pulmonary function tests revealed mild to moderate respiratory disease. I could not function without Proventil inhaler as bronchial dilator. By that time, I was working on the Sixth Floor of the East Tower.

During the summer of 1987 my problems worsened. Mold was growing on the carpet. The smell of mildew was pervasive. Shoes and briefcase left over a weekend turned green.

I had previously had a good attendance record, seldom using sick leave. I used every single day of sick leave I had, used annual leave, and had to borrow sick leave. My office mate, who was never sick before, was constantly sick. My branch chief, who did not previously have headache problems, got headaches.

I moved to Crystal Mall II to a stuffy interior office with poor ventilation. Still, I am now off Proventil except for occasional use. I have missed only one day of work in nine months, due to colds, flu. I lost some other time for dental surgery. I no longer need Sudafed to sleep at nights.

I am firmly convinced that Waterside Mall damaged my health. Yet I am not one to complain very much and you will not find my name among Agency statistics.

History #4

I was employed at EPA for three years and had been in excellent health prior to my illness. In early December 1987, I moved into newly renovated office space in EPA's third floor mall. I immediately smelled a strong chemical odor that nauseated me. Four days later, I began experiencing symptoms of severe sore throat, headaches, nausea, and burning eyes while in my office. These symptoms would decrease overnight but would reappear when I returned to the office the next day. Within a few weeks, I was also experiencing facial burning, extreme fatigue, coughing and chest pains, a chemical smell and taste in my nose and mouth, and a facial rash. Within the space of four months, my supervisor moved me to three locations within the EPA complex to try and relieve my symptoms. I would not have any reaction for a few days, and then the symptoms would reappear.

While this was happening at work, I was also having problems at home. My face burned in my kitchen, so I got rid of any chemicals in my apartment -- laundry detergent, cleaners, ammonia, etc. I had the pilot lights in my gas stove turned off. My in-laws installed new carpet in their home and I could not enter their house for four months because I experienced the same symptoms I had at work. I began to have symptoms while doing the simplest things, such as reading newspapers; walking to the grocery store; going into a smoky restaurant. If I went on a trip, I had trouble finding a hotel room where I did not react.

After five months in the EPA building, I tried working outside the building. I tried the D.C. public library next to EPA, but they had new rolls of carpet ready to be installed and I experienced the same symptoms. I tried working at several contractor's offices, but after a few days the symptoms would appear.

In May 1988, I went to see an occupational physician, underwent some pulmonary tests, and was diagnosed as having developed a syndrome of asthmatic bronchitis and upper respiratory irritation secondary to exposures to emissions from renovation and primarily from the new carpet applied at EPA. My doctor recommended that I leave the source of contamination (the EPA building) and take steroid inhalants to see if the asthmatic bronchitis would improve. I was out of work for four months during the summer.

After I left EPA, I tried to work at home and had my work files moved there, but I reacted to whatever small amount of chemical was still on the papers and files. I would also experience the symptoms for no apparent reason: once a group of sick EPA employees met with a Department of Labor staffer in the park next to the Russell Senate Office Building. After an hour I started experiencing all my symptoms. I never did find the cause, but my face broke out in welts and burned so badly that I had to apply ice packs to relieve the pain.

I eventually found another Federal job in the fall of 1988. I had to spend two weeks there to see if I would react to the building before accepting the position. I continued to be more sensitive to exposure to irritants, such as cigarette smoke, but by using an air filter I was able to reduce the level of my symptoms. By late fall, all of my symptoms had gradually diminished at work. However, in April 1989, I was moved to a basement office which is located above the garage. The second day in the office I smelled car exhaust and within minutes was experiencing facial burning. Since that exposure I have again become increasingly sensitive to exposure to irritants, so that I cannot read the newspaper without my face and eyes burning. I recently purchased a new car and I am experiencing symptoms of eye and facial burning whenever I am in it.

The point of my testimony is to get across the fact that my life was -- and continues to be -- drastically altered as a result of exposure to a chemical or pollutant in the EPA building. Activities that I once took for granted, such as reading the newspaper, were curtailed. My life became very circumscribed during the summer and fall of 1988 while I was recovering. That summer the facial burning, coughing and chest pain were so severe that I was afraid to go places for fear I would react to something -- something I often could not even smell. My doctor advised me not to go outside if the air quality index was high because the ozone and other pollutants would affect me. That summer we had continuous weeks of poor air quality, so I had to stay inside my apartment during those days when the AQI was over 100.

I became extremely depressed about my condition. It seemed so hopeless and no one had any answers. While my supervisor was very supportive and sympathetic, there was little she could do except move me from office to office. My doctor could only advise me to leave my job at EPA and see if I would recover. I began worrying about the long-term health effects. I felt my life was completely out of control and I just did not know what to do. I eventually went to see a psychotherapist to help me deal, on a rational basis, with what was happening to me.

I think this is probably the most traumatic thing that I have ever experienced in my 38 years. While my Worker's Compensation claim was eventually accepted, and I am grateful to have received some monetary compensation, I wonder if I will ever regain my health. Based on my experience, I believe there really is nothing that can be done to help someone <u>after</u> exposure to chemicals or irritants. So the only solution is to <u>prevent</u> the exposure. Anything that Congress can do to ensure that office workers have a safe and healthy workplace will be gratefully received.

HISTORY #5

I am 52 years old. I have been employed by the Federal government for twelve and one-half years and for U.S. EPA for eleven of these years. I have both regional experience (Region V, Chicago) and EPA Headquarters experience (Superfund Program since October 1985). I have a history of high work ratings and an outstanding work record.

On January 20, 1988, I entered my office at 7 a.m. and noticed a strong acrid smell from the carpet that had been installed with adhesive the previous afternoon. Within fifteen minutes, my eyes, face, ear canals, and lungs were burning. My voice became hoarse and disappeared and I had great difficulty breathing. I was disoriented and dizzy. My eyes and nose were running. I found later I had gone into anaphylactic shock. I left the building and stayed away for a number of days until I felt somewhat better. My doctor said that I had a severe allergic-type reaction to the carpet fumes.

Upon my return I was moved to two other spaces (the sub-basement and an area that was carpeted three months previously). I continued to become sicker and react more strongly everyday. I could not remember things, I could not concentrate, and I had other symptoms of neurological problems. I was in severe pain. I continued to be unable to talk after being in the building. On the advice of my doctor, I left the building for five to six weeks until I recovered. My doctor only allowed me to return to work if I was placed in an area without ongoing renovation that was determined to have fresh air intake, and ventilation according to existing ASHRAE standards.

I returned to work at the end of March and was told by both my supervisor and a contractor with EPA's Health and Safety Office that there wasn't anywhere in the building that could meet ASHRAE standards. My supervisor told me I would have to work where the rest of my section had been moved while our old work area was renovated. I experienced reactions that continued and became more severe from morning to afternoon and from Monday to Friday. The ventilation in the area was poor. All my symptoms were documented on a daily basis by EPA's Health Unit. Within ten days of my return to work (most of the day would be spent outside), my symptoms were unbearable and neurological problems returned. On April 7, 1988, new carpet was installed in a nearby area. I went into anaphylactic shock even more severe than I experienced on January 20 and was helped out of the building. On advice of my doctor, I have not reentered it since.

It took months for my lung pain and neurological disorientation to become less severe. I was without normal use of my voice for seven months (extensive speech therapy helped it recover), although I lose it upon exposure to indoor pollution. I became reactive to other compounds and chemicals, paints, solvents of all kinds, gasoline fumes, fuel oil, perfumes in all products, cleaning compounds, cigarette smoke, most indoor environments, etc. I am limited on where I can go and must wear a respirator to ride in a car.

Prior to my exposure at EPA, I had problems with cigarette smoke, but was otherwise healthy. I jogged approximately 4 1/2 miles four or five times a week, lifted weights, did aerobics, and had good lung capacity. I cannot jog now, due to severe lung pains. I have been rushed to a hospital when exposed to paint fumes, due to inability to breathe.

I have been on leave without pay and had no income for seven months. Since then, I have gotten workers compensation. Other EPA employees who were directed by their doctor not to enter Waterside were allowed to work at home or elsewhere, but I was not. The alternative work space recently acquired by EPA has a whole-building ventilation system where paints and solvents recirculate and cause me to react again. After my leave without pay ends in August, EPA has no obligation toward me and I will not have a job.

One time, I tried to find a job elsewhere, but no one would hire me due to my health problems. There is a high probability that I will be unable to find an office in which I could work without damaging my health.

I have 21 years of education. I have invested thousands of dollars in my education, as has EPA. My career, my private life, and that of my family have been irreversibly affected. My health and my income are tenuous. I am at risk whenever I leave my house. Due to indoor air pollution at EPA, my life is no longer within my control or what it should be at this stage of my life.

HISTORY #6

During Spring 1988 when my office on the Ninth Floor of the East Tower was recarpeted, I developed irritating symptoms which lasted four to six months. These included dry throat and itchy eyes. I was unable to sit at my desk for long. I had headaches and trouble concentrating. I went to the Library for fresh air, but found the air there even worse.

I still find the building irritating, but no longer have these symptoms.

HISTORY #7

I am a very sensitive person to begin with. In May 1988 I went to a person's office in the basement of the East Tower to give research assistance. The office had been carpeted in January. Within minutes, hives started to break out on my fingers and arm.

I asked him, "Do you have a cat?"

"No."

"Have you been in someone's house who has?"

"No. ---- Oh! You must be one of <u>them</u>. Some people react to this office."

The hives went away in a couple of hours.

* * *

Around this time I attended a meeting in the Fifth Floor East Tower Conference Room. The new furniture there gave off a "new" smell. I went in the room perfectly normal. Within 15 minutes I lost my voice and started coughing. I couldn't stop coughing and had to leave.

HISTORY #8

When my work area was recarpeted in early 1988 I experienced severe headache, body weakness and pain, and eye and throat irritation. My symptoms are specific to Waterside Mall.

This past winter I have been working in the alternative work space. I am able to go to hazardous waste facilities with no effect. I have no general chemical hypersensitivity.

HISTORY #9

At 4:30 P.M. on Friday, April 22, 1988, EPA removed the old rugs from my office 932B in the East Tower and replaced them with new ones. The entire half of the 9th floor had its rugs replaced with new ones. I observed the process while I was packing my office so that the workmen could move my office and personal belongings.

I returned to work at 6 A.M. on the following Monday. I had sustained a very severe headache by 3:30 and went home. The headache ameliorated over the evening. I went to work at 6 A.M. on Tuesday and by noon the headache had returned, my throat had swelled, I had difficulty breathing and was dizzy and light-headed. I had shortness of breath, my voice became hoarse and my eyes were red and irritated. I lost my stamina to work for periods of greater than one to two hours at a time. On April 26th I was reassigned to the library to work. Similar problems developed, so I attempted to work in the basement of the East Tower, far removed from the areas being carpeted. I became progressively worse in that area. It turned out that the basement area had been recarpeted a few months earlier.

I was exposed once again on May 15th when my supervisor against my doctor's explicit instructions required that I meet him in an office that had recently been carpeted. After 20 minutes of exposure, my lungs felt as if they were on fire, my shortness of breath became acute, my hoarseness worsened markedly so that my voice became unrecognizable and I was not able to carry on conversations for more than 30 minutes. I became light-headed and confused.

On or about June 20th at the insistence of my supervisor, I attempted to work in the public library, Southwest Branch, next to EPA. After about 10 minutes, I had shortness of breath, tightness in my chest, hoarseness, confusion, headache. I looked around the library and found at least six new rolls of carpet. I asked my supervisor if he was aware of the carpet in the library and he said that, yes, he had observed them earlier before he suggested that I attempt to work there.

After that I remained at home working on assignments and turning them in to branch chiefs in my office. My stamina has not returned. My hoarseness, though better, returns from time to time. If I become exposed to any new or fairly new carpet my symptoms return immediately. I cannot go into buildings without wondering if I will become ill. The Fairchild building had carpets laid in the hallways and corridors and that made me ill. The EPA offices in Crystal Mall #2 had carpets installed on a different floor from where I was at a two hour meeting and I became ill. I entered a newly-constructed building to pick up a letter and remained for less than ten minutes and became ill.

HISTORY #10

I have worked without incident at Waterside Mall for several years. About 3 months ago, I was suddenly afflicted with irritation of the optical and respiratory mucosa. My symptoms appear only in the building in which I work, and are apparently due to some environmental agent in the building air. Over a period of two months, the symptoms progressively worsened until episodes of acute shortness of breath and prolonged eye irritation occurred. Visits to a series of physicians and numerous expensive medical tests including lung, heart, and blood analyses, disclosed only that I was in perfect health, except for a lung function which improved upon exposure to bronchodilator, which is consistent with a historical asthmatic condition which had not troubled me for many years.

I am senior level non-managerial staff, a respected expert in my field, consulted regularly by many inside of government and out. Suddenly, I can no longer enter my office without debilitating symptoms. My management, upon recommendation of its occupational health physician, brought in to treat workers with indoor air complaints, has generously provided alternative workspace in a nearby building. The air in this alternative building, however, which also has a forced-air ventilation system in addition to operable windows, also caused irritation of my mucous membranes. Only after the ventilation ducts were sealed off and outdoor air brought in by a window fan, did the symptoms alleviate.

At this stage, it has been 3 months since the onset of symptoms, and I have consulted 5 physicians and undergone tests in two hospitals. Both the government and my private physician advised me to either clean up the building or stay out of it, that allergy injections will be of no avail. I am faced with the continuing prospect of isolation from my work group. In addition, my supervisor has complained that my work productivity has been declining, and although he sympathizes with my plight, he suggested that working longer hours and more attention to work will be necessary to avoid adverse consequences such as a disability retirement. Yet I am fatigued from my health problems, and have to work harder just to maintain access to ordinary information and services, as well as cope with setting up a new office with less access to the means of production than before.

I face recurring symptoms whenever I enter the building, isolation, job insecurity, medical bills, financial insecurity (with children in college and a mortgage to pay), and if I should change jobs I have no guarantee that I will not encounter another problem building. Moreover, changing jobs may mean I can no longer pursue my specialized area of expertise. A disability retirement means a very large reduction in income. Like many sick building victims, I face continuing stress, fatigue, frustration, anger, isolation, fear, uncertainty, and the prospect of being written off by my management, as well as the possibility of financial disaster. Although this problem has been caused by the building environment, the probability of success of a lawsuit, given the current lack of understanding of these phenomena, appears low.

In sum, there is clearly a need for an understanding by management of what happens to victims of Sick Building Syndrome, some system of public health training and accountability for those who run buildings, and a need for development of an organized support system to aid individuals handicapped by sick building syndrome.

HISTORY #11

Prior to March 1988 I had no problems working in any building. In early 1988 new carpet was laid in the halls on the floors where my branch and division are located. During late Winter, building renovations, including new carpeting, occurred in the halls outside my branch's and division's space. Half my branch moved into newly-renovated space in early April.

Sometime in late March 1988 I began to feel occasional "mono-like" symptoms at work, which cleared up after work. These symptoms worsened over time and included headache, fatigue, head swimming, and piquedness. By mid-April, I was feeling sick by midweek and would not feel better until late Sunday. By May, the time during the week before the symptoms would appear became shorter and the time away from Headquarters it took to feel better became longer. By May, I continued to have difficulty concentrating, even after I would no longer otherwise feel sick.

I tried working in the West Tower, limiting my travel to other parts of the building; but I experienced reactions within a day and a half. Upon medical advice and with my management's support, I started working at home in mid-May.

In August, I was stationed at the office of a subcontractor. I experienced mild to moderate effects from the building within a half hour to 45 minutes, but since my symptoms didn't usually get worse, I was hopeful that this arrangement would work out. Major renovations began on the building in October, although not on my floor. I started getting sicker and sicker.

With the support of my program management and the office of EPA's Assistant Administrator for Administration and Resources Management, I started working in Crystal Mall #2. Typically, I get mild to moderate reactions to the building after a half hour to 45 minutes. These get much worse during building activities, such as painting, work above drop ceilings, and when people use jet-ink printers, markers, nail polish remover, and yellow highlighter.

I want to continue working for EPA, even though I never know what surprise is next in store. EPA's facilities coordinator at this building is sympathetic and cooperative. He has tried to alert me to various activities going on in the building, but his jurisdiction is limited.

In my branch here at Crystal, when new furniture, which had been on order for over a year, arrived, I became very ill and continued to react for a month whenever I went into my branch chief's office. When I have gone to the shopping and dining area underneath my office building, I have on occasion gotten ill from emissions into the open areas from the continual store renovations and from other activities, such as gluing at a shoe repair shop.

I have had to change how I go about things at work and away from work since last May. Short exposures from seconds to minutes can make me very ill for hours, days, and even a week at a time.

HISTORY #12

One day in 1981, I got off the elevator on the Third Floor of the East Tower at Waterside Mall. New carpet had just been installed. My eyes started burning and tearing and got scratchy and red; my throat and lungs started burning; and I became short of breath. I was sick for three weeks.

Most of my division was away at a retreat, but one other person did get sick with chemical bronchitis. This person was sick for two and one-half weeks. She continues to this day to react with burning eyes in fabric stores and she can't stand the smell in them. When she goes into carpet stores, she finds the smell so noxious that she gets physically ill.

My division ordered tests of the carpet at an EPA test facility. They determined that the glue for the carpet was involved. It contained pentachlorophenol and other volatile organic chemicals. Pentachlorophenol is a sensitizing agent and a suspected oncogen (causes tumors) and fetotoxin (harms fetuses).

Several women in our division were pregnant at the time. The other woman who got sick finally had to revert to Congressional pressure to get EPA to stop using this glue.

Except for some allergies, some sinus trouble, and broken bones, I had not been sick before. Since this exposure, I have had a lot of trouble getting rid of colds and have had pneumonia three times since 1981. Since 1981, I react to spraying, new carpet, and heavy perfume - and I love perfume - with wheezing, burning eyes, dizziness and nausea. I have lost perhaps two to three months work since 1981 because of this. Before this, I used very little sick leave.

HISTORY #13

In late October 1986, new carpeting was installed in all of the offices in my division in the West Tower. During the first two weeks after installation, once I had been in the office for an hour, I would experience eye irritation, sore throat, aching lungs, headaches, and nausea. These symptoms ceased within an hour of leaving the immediate office area. As time went by, my sensitivity increased, so that I could not spend more than 15 minutes in a newly carpeted area without reacting, and the degree of reaction increased. Shampooing the carpets helped somewhat, but not enough for me to be able to stay in the office. My supervisors were extremely helpful and arranged alternative work space for me. Because of my continued sensitivity to the carpets, I was not able to return to my office for three months.

Since this incident, my sensitivity to new carpeting has remained high, and I am unable to spend more than a few minutes in a newly carpeted area without serious discomfort.

Here is how EPA's administrative management handled this situation:

On October 29, 1986, I spoke on the telephone with a representative of EPA's Office of Occupational Safety and Health (OSH) about the problem I was having with the carpet. He said he was looking into keeping the ventilation dampers open at night and would look into cleaning the carpets to eliminate odors. He referred me to his office's industrial hygienist.

I notified a union representative of the problem sometime in November 1986. She accompanied me to a meeting with the industrial hygienist of OSH on November 17th. The industrial hygienist gave us copies of the indoor air quality readings done for Waterside Mall by a lab at RTP, North Carolina, as well as material safety data sheets on the carpets. She told us that the Agency had switched from glue to padding in carpet installations in the early 1980's, but had recently returned to using glue. The union representative told the industrial hygienist that she would like to see the Agency do a health survey to determine if indoor air quality was causing employee health problems.

On November 19, 1986, my Division Director called EPA's Director of OSH to discuss the problem. The Director of Occupational Health and Safety said he thought the problems were caused by phenolic solvents and formaldehyde, and that these substances should finish offgassing after about 2 weeks; the problems caused by this offgassing were worse if gluing was not "done right." He said that if there was adequate ventilation in areas where new carpets were installed, there shouldn't be a problem with them.

History #15

Prior to Illness

I am 26 years old. I have a BA in Reclamation and Spanish from Frostburg State University and a Master of Environmental Studies from Yale University. I began working at EPA in July 1987. I enjoyed my work very much; it was challenging and interesting. I had a great deal of responsibility and found that rewarding. I was also fortunate enough to work with people whose company I enjoyed. Thinking about my future was exciting. I was also very active, had a great social life and excellent health.

When I Became Ill

In February and March 1988, I started to experience health problems, such as unusual fatigue, amenorrhea, abnormal acne, nausea, headache, burning eyes, runny nose, sore throat, diarrhea, dizziness, clumsiness, memory lapses, irritability and difficulty concentrating. These symptoms coincided with progressive renovations on my floor, but I didn't associate the two.

My symptoms continued and I often felt mentally dull and overwhelmed by the type of work I had completed successfully before. I also found that I always felt better in the evenings, in the early morning and on weekends - when I was not at work.

We moved to a newly renovated office on Monday, March 28. The chemical odor was very strong and I began to feel awful. All my symptoms grew worse and I became more disoriented and confused. I began to realize that my problems were related to the materials used in the renovations, as with people who are often affected by fresh paint fumes. On Friday I began to feel worse than ever and literally could not perform my duties. That afternoon I ended up sitting at my desk, eyes and nose running, arms and legs numb, throat closing up, gasping for breath and barely able to speak or move. Someone happened by, and I gestured for help. I was helped outside and we encountered my boss, whose only question was, "Are you reacting to that stuff?" After reaching the outdoors and sitting for a few minutes, I began to feel better. Over the weekend my muscles ached, I felt weak, and I slept a lot.

On Monday, my boss advised me to avoid the new office until the fumes had dissipated. I worked in the library and other parts of the building, but still felt poorly. On Thursday, April 7, I arrived at work feeling fine. Ninety minutes later I was helped outside again. The nurse was summoned and told me not to go back inside. She sent me to the hospital. Of course, by the time I saw a doctor, I was feeling much better. He found nothing wrong except that I was slightly "out of it."

The doctor referred me to an Occupational Health Specialist who advised me not to return to Waterside Mall until the "environment is more clearly defined." That was just the beginning of my visits to doctors and my medical bills. I've seen other Occupational Health specialists, an allergist, a gynecologist, a neurologist, my general practitioner, and a clinical ecologist. I have also researched this medical problem extensively and discussed it with many people. The diagnosis? I have multiple chemical sensitivities resulting from an exposure to something at work. The treatment? Avoid the source of the problem and other irritants. There is not much else I can do, except eliminate as many sources of irritation as possible.

Since My Illness Began

I have been working at home. In fact, I have spent the majority of time at home. At first I tried working in other buildings, where we have additional offices, contractors, training classes, etc. I always ended up reacting to something and leaving very ill. My exposure to the renovation materials at EPA caused me to become sensitive, or allergic, to many other substances, some of which I can identify, others I cannot. For example, I cannot tolerate natural gas and I have to avoid all buildings where gas is used so that I don't become ill. I have just purchased a home and had to renovate so that it is completely electric. I feel ill at gas stations, stores, department stores, office buildings, others' homes, restaurants, malls, etc. Some places make me react worse than others, but there are only a few safe havens where I can spend an entire day without experiencing some adverse symptoms. Some reactions are caused by things like cleaning products, building materials, carpets, paints, and finishes and preservatives on new products. Most buildings are so energy-efficient that all sorts of irritants have built up and are not dispersed with enough fresh air. The most frustrating reactions are those that I have in such buildings, where I don't know exactly what is causing the problem, and those that I have outside, caused by construction, exhaust, air pollution. Even my skin is extremely sensitive to sunlight now! Before this problem at EPA, I didn't even have hayfever and my only allergy was to poison ivy.

The Present

Now I spend most of my time at home. I try to use nontoxic products and avoid irritants and problem places. I become ill on the Metro and on buses, and I have no car, so I am restricted by transportation as well as by problem places. My social life is not as satisfying and I do not feel as healthy as I used to. I also do not feel as mentally sharp and find it difficult to concentrate on mental tasks. My memory is not as good.

Sometime during November, I also met with the person in charge of carpet installation in EPA's Facilities office. The Facilities person said that the carpets were not glued down, except that small amounts of glue were being used in the protective strips underlying the carpets in each doorway. He called the carpet manufacturer to obtain information on the constituents in the glue. We learned that ethylene glycol and morpholine were in the glue, and that the carpets were rolled and packaged when they were still warm; the manufacturer said that when they were reopened, pent-up gases might be released which could cause eye irritation. The Facilities person had the carpet in my office shampooed in an attempt to alleviate the problem I was having.

HISTORY #14

My branch's office is on the third floor of the Mall at Waterside. The office was remodelled and new carpets were installed during Winter 1987-1988. We moved back to our office in January 1988.

There was a noticeable odor in the office. We tried to vent the office by leaving the corridor doors open and running fans for a couple of weeks. The odor lasted for over six months. Around the corner fifty yards from our office, a sensitive person who is not in our branch had to leave her office because of the emissions coming from our remodelled space.

Throughout the first half of 1988, five out of the seven people in my branch complained of headaches and throat and eye irritations.

We heard that EPA's Facilities Management Division had said that the carpet had not been glued down because the use of glue had been discontinued for some time, but I personally watched the carpet being glued. The glue had a golden to orange-brown color.

My personal illness has continued to this day. I had no previous health problems, except for occasional flu brought home from school by my kids. Now I catch anything that comes by. I have had an ear infection, strep throat five times, and five or six rounds of flu. In between illnesses I run a low-grade fever for which my doctor cannot find a cause. I now sweat easily, which is awkward in a professional setting, such as in meetings. I walk down the hall for a drink of water and I break out in a sweat. When others in my office have heaters on, I get in front of a fan. I feel like I am now known as "Mr. Sick." People are always asking me if I feel better.

I have no direct information saying that my illnesses are related to my office, but the coincidence with the timing of the renovation is strong.

I have not reported my health problems to EPA's Health Unit because I am uneasy about my anonymity being preserved.

My career has suffered. I am working at home. I was due for a promotion in August 1988, but my boss said that my situation made me lose it. I simply cannot work as effectively at home as I could at the office. Since I can hardly go anywhere, it's hard to find another job. Now, when I think about my career future, it's not exciting. It's scary.

HISTORY #16

HEALTH STATUS

I have suffered major illness which may be permanently debilitating, as a direct result of carpet installation and construction at EPA. Since September 1988, I have taken over $1,500.00 of prescription drugs including systemic and inhaled steriods and a nasal spray containing a steriod. I have experienced a variety of side effects as a result of taking these drugs including partial supression of my adrenal system (now normal), severe respiratory system inflamation, other severe respiratory insults, and possible stress to my heart. My condition has progressed so that I now experience symptoms of acute chemical hypersensitivity. My personal physician's diagnosis is that I am in a hypersensitive allergic state.

Specific examples of my symptoms of chemical hypersensitivity include respiratory tract inflamation from exposure to volatile emissions from zenith computers and volatile emissions from other plastic products such as the hard, smooth black plastic used in many Radio Shack products. I have also stopped reading newspapers and some other types of printed materials because of a reaction to the inks. I have not experienced symptoms of hypersensitivity prior to my exposures from my work environment at the EPA Waterside Mall Complex.

My physician has recommended a multiple modality treatment for my condition which includes a three to five year series of allergic desensitization injections. The shots are very expensive; I have yet to start one especially costly series because of lack of funds. Additionally, I now take time from my workday twice a week in order to take these shots. Spending time during the workday to travel to the allergist's office to receive these shots is impacting my ability to get my job done in a timely manner.

FINANCIAL IMPACTS

I have incurred medical bills of over $2,750.00 since September 1988 as a direct result of exposures in the EPA Headquarters Waterside Mall Complex. The outlay of thousands of dollars in medical expenses has caused great harm to my financial well-being. I have been on a very tight budget and have not been able to sustain the outlay of thousands of dollars in medical expenses.

ARMY DETAIL

After a multistage negotiation, The Office of Personnel arranged a detail for me to the Army Materiel Command where three-fourths of my salary would be paid by EPA and the Army would pay for the remaining quarter FTE. This detail was an ideal short-term solution to the situation at EPA and

would allow me a year to seek permanent employment elsewhere. However, the Department of Defense has made a blanket purchase of Zenith computers to which I have an allergic reaction. Upon entering the Army office to which I was assigned, I experienced an immediate blockage of my ears, followed by a burning throat and swelling of my neck. Later in the day my lungs began to burn and tighten. The Army management responded to my problem by locating another office with a lesser number of computers. I returned about two weeks later for a day to check out that space. The severity of my response was of the same order of magnitude as that to the first Army office. The Army folks were very disappointed that the detail fell through, as I was, especially after having spent many hours over several months negotiating this detail. The Army requested that I be replaced by another EPA person because they had structured a job specifically for a person with a one-year tour of duty.

CAREER IMPACTS

I have never been allergic to plastics or inks prior to my EPA building exposures. I have become chemically hypersensitive as a result of my EPA building exposures, and my employment opportunities have become greatly reduced because of my newly acquired, building caused, chemical hypersensitivity, specifically to emissions from materials used in Zenith computers. The possibility of employment by the Department of Defense has been greatly reduced due to their blanket purchase of Zenith computers.

EXPENDITURE/INVESTMENT OF UNITED STATES TAX DOLLARS

The direct investment of time and money the United States Government has made in support of my education and employment is substantial. The United States Navy supported me and research for my dissertation for three and one-half years while I completed the requirements for my PhD. Since receiving my PhD in December of 1982 I have worked in the environmental field for the Navy (one year) and for EPA (five years). The United States Government investment in my dissertation research and employment, using an overhead factor of 1.0, is over $580,000.00, not an amount to be taken lightly or to be thrown away.

The monetary costs of the potential loss of professional careers at EPA Headquarters resulting from exposures to $300,000.00 of faulty carpeting are clearly an order of magnitude higher than the cost of the carpet. It is not cost effective to throw away or get rid of affected employees and their expertise' instead of the carpeting. Additionally, the much discussed possibility for disability status for affected employees should be for those individuals incapcitated by accident or standard illness, not from assult by carpet exposure. Moreover, disability was never meant to be used as a surrogate for proper building operation and maintenance or product safety liability, standards and procedures. Although Waterside Mall exhibits characteristics of "sick building syndrome," the acute and severe illnesses experienced by EPA Headquarters employees since the installation of the affected carpet implicate the carpet as a causal agent and initiator of many severe health effects.

The next day, February 14, 1989, I returned to my HMO and was finally referred to an Internist. I was diagnosed as having an upper respiratory infection. Congestion in my left inner ear most likely caused the vertigo episode the previous evening. However, the doctor was puzzled by my red, painful eyes. Several x-rays of my head were taken to determine if there might be some congestion around my eyes that would have caused the redness and pain. No congestion was found in the areas around my eyes. I was prescribed a decongestant and was advised to continue with the antibiotics. The doctor also recommended that I stay home from work for the remainder of the week. I did not go in to work the following day.

Since I was feeling better, I decided to return to work that Thursday. Within three hours of being back in the building, my eyes were not only throbbing with pain but also became swollen. The severe headaches also returned. I spent the following day sick in bed.

On March 1, 1989, I was examined by EPA's contract doctor who stated, in a letter to my Division Director, that he found evidence of severe conjunctivitis and bronchitis and that my symptoms were indicative of an occupationally-related medical disorder. He also stated in the letter that he was concerned about the severity of my illness and "strongly" recommended that I be provided with alternate work space as soon as possible.

Although most of the painful symptoms have diminished, I occasionally feel the pain around my eyes and have headaches if I stay in the building too long. I am also experiencing other symptoms, such as the inability to concentrate, memory loss, confusion and occasional difficulty in speaking.

Due to my "illness," I have had to restrict my social life and extracurricular activities. This included my resignation as a board member of my State Society.

The request for alternate work space is still being processed. (It has been about two months now.) At any rate, I am actively seeking other employment either at the Crystal City Office of EPA or outside of the Agency.

HISTORY #17

In mid-December 1988, I accepted a position with the Environmental Protection Agency and looked forward to a new and challenging job. To the best of my recollection, I do not remember ever being warned about the "sick building syndrome," being advised about employees who have become ill as a result of working in the building, or being told that new carpet installed in my office the previous Spring had adversely affected some people.

The office in which I am working is located on the 2nd Floor in Southeast Mall at EPA Headquarters.

When I first started working at Waterside in mid-January 1989, renovation activities were occurring in the EPA guard area by the "Safeway" entrance. Within a week after I came on board, I became ill with flu-like symptoms which included fever, body ache, and headaches, and had to stay home for two days. Given that this occurred in the middle of winter and the "flu season," I did not think it was anything unusual. However, most of the symptoms remained and continued to progress. Both of my eyes were blood red and painful and my headaches were excruciating. As far as I can remember, I have never before experienced such debilitating pain.

On Friday, February 3, 1989, I went to see the Advice Nurse at the HMO to which I belong. I was given a prescription for the treatment of conjunctivitis and was told to return if the medication did not effect any improvement. I was back to see the Advice Nurse within four days on February 7, 1989. I was also running a low-grade fever. I was given another medication for my eyes as well as an antibiotic.

Although I felt very ill, I continued to come in to work, as I had just started this job, was in the middle of training, and felt guilty about staying home! The symptoms continued, and I also began to experience new symptoms. I became so congested that I could hardly hear out of my left ear. I also felt nauseated at times and experienced dizziness. There was a "tingling" feeling on my scalp and some numbness in my arms. Not only were my eyes red and painful, but I also began to see black spots and "waves," particularly out of my left eye. There was also a gelatinous growth on the same eye.

About an hour after arriving home from work on February 13, 1989, I almost fainted. Fortunately, this did not occur while I was driving home from work on I-66. I recall talking to my sister about how painful my eyes were and that the headaches just did not seem to diminish, when the room I was in suddenly appeared to be spinning and I felt my body going limp.

APPENDIX II

EPA'S INDOOR AIR POLICY

Petition to Administrator William Reilly

Indoor Air Quality at Waterside Mall

Attached is a letter to Bill Reilly expressing concerns regarding the quality of air at Waterside Mall. The goal of the petition is to obtain as many of the signatures of concerned employees as possible in order to demonstrate the breadth of this problem to Mr. Reilly.

Mulitiple copies of the petition are being circulated within most offices of EPA. Please review the letter to Mr. Reilly and if you support its message, please sign the petition. Whether or not you choose to sign, please pass the petition on to fellow employees.

The goal is to obtain all signatures by Friday, October 13, 1989. Please return all petitions to the Mr. Robert Knox of the Human Resources Council (mail code = OS-130, room number = 2111). Signed petitions will be submitted to Bill Reilly as soon as possible.

Thank you for your interest and support for this very important issue!

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

The Honorable William K. Reilly
Administrator
Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

Dear Mr. Reilly:

The purpose of this petition is to express our concern regarding the indoor air quality at Waterside Mall, and to encourage you to become personally involved with the expeditious resolution of this issue. Whether the effects of the air quality in the building are real or perceived, the controversy surrounding this issue has demoralized Agency employees and distracted them from their important mission of protecting the nation's public health and environment. The current conditions at Waterside Mall present a confusing and ironic message to those outside the Agency, and undercut our credibility with regard to the mission of the Agency.

Over the course of the past year, a number of EPA employees have had severe reactions to working in the Waterside Mall complex, and as a result, these employees have been reassigned to office space outside of the building. While difficult to prove, it is strongly suspected that these reactions have been caused by conditions related to poor indoor air quality. There are many other employees who have experienced other less severe reactions, such as; headaches, dizziness, respiratory irritations, including shortness of breath. In addition to the physical problems experienced by these employees, there is added anxiety that their conditions may worsen to the point that they too, will not be able to work in the building, and perhaps be limited in their career paths.

In response to this issue, a number of studies have been performed to identify and resolve the air quality problem. While study of the problem is important, it appears that some of these studies may not have been comprehensive in nature, and may in fact have raised more questions than they answered. Additionally, the results of some of these studies and other pertinent information have not been made available to employees at Waterside Mall, further undercutting the confidence level of many. For example, the employees were not made aware of the concerns and recommendations raised in the June 25, 1989, letter from Dr. Mark Bradley. There is also concern that the Agency will continue to study the problem, and take no interim measures to ameliorate the situation.

Indoor air quality at Waterside Mall remains a very serious issue which EPA must address. There is little doubt that a limited number of employees have already been seriously affected, while many others are experiencing less severe problems but are worried about future effects. In either case, the result is a less productive and effective workforce and a dampening of our ability to attract and retain qualified personnel. As evidenced by numerous articles in the press, and concern expressed by Congress, the current conditions at Waterside Mall raise questions regarding our ability to fulfill EPA's mandate to protect human health and the environment.

We hope that this petition will demonstrate to you how seriously the employees of Waterside Mall view this issue. We strongly encourage you to make this issue one of your top priorities and take immediate actions to address these problems. We regret having to bring this to your personal attention and would greatly appreciate hearing from you directly in the very near future.

Attachment (Petition signed by EPA Employees)

656 EPA EMPLOYEES SIGNED THIS PETITION

RJC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

OCT 2 1 1989

Honorable William K. Reilly
Administrator
US Environmental Protection Agency

Dear Bill:

We are forwarding a letter initiated in OSWER and signed by 656 staff and 84 managers from several Agency organizations which seeks your immediate assistance in remedying a wide variety of building-environment problems with Waterside Mall. We have recently toured most of the OSWER office space on the second and third floors of the Mall, met with employees in alternate space in the adjacent apartment building, and conducted a meeting with all our managers to explore the full dimensions of the problems and consider actions to rectify them.

These meetings and our personal examination of working conditions convince us that several employees have experienced significant health problems for which the building environment seems to be the most likely explanation. Many other staff have experienced less severe symptoms that may be associated with the building and which give them concern about possible chronic or subchronic effects. Almost all employees frequently suffer discomfort due to fluctuations in temperature and uneven air circulation, noise, lack of natural light, and crowding.

In addition to concerns about our employees' physical and mental well-being, there can be no doubt that the working environment in many areas of Waterside Mall prevents our staff from performing to their full potential and are a liability to us in today's very competitive climate of employee recruitment and retention. As senior managers, we are acutely aware of the size and difficulty of the job we expect the OSWER staff to do, the climate of high expectations and controversy in which they operate, and the potentially serious implications for our programs of any loss in productivity. Our staff members are proud of their accomplishments,

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as evidenced by the citations posted in many of their workspaces we visited, and want to do their best for the Agency. We also sensed that many of those affected by the working conditions have been reluctant to press their concerns on senior managers whom they know are grappling with many difficult and controversial issues of national importance. They don't wish to be another "problem" on our list. But as the potential occupancy date for the new building has been pushed into the future, the frustration with OARM and Town Center Management's efforts to "stay even" with deteriorating conditions has grown, and concern for the well being of colleagues seeking medical attention or alternate work space has built. Personnel at all levels are respectfully urging us to act.

While many areas of Waterside Mall are beset with problems, we think the conditions on the second floor and some portions of the third floor of the Mall warrant extraordinary measures. We believe that employees in these areas should be relocated to space of quality comparable to or better than the tower space, as quickly as possible. The space which is vacated could be converted to conference space, file storage, and other uses which would not require permanent occupancy. OSWER managers and staff do not want their problems alleviated at the expense of other agency staff.

We recognize that there will be management challenges for OSWER from having some units in the Waterside complex and others in another facility. However, when balanced against the health concerns and management problems posed by existing conditions, we believe that relocation is the proper course. We can also appreciate that there will be substantial costs and effort involved in procuring space elsewhere and are prepared to go to great lengths to assist you and Office of Administration and Resources Management and the General Services Administration in resolving this difficult problem expeditiously.

We have had initial discussions of our findings with Charlie Grizzle and he has been supportive of our request, and would like to join us in meeting with you in the near future to discuss next steps.

Sincerely,

Jonathan Z. Cannon Don R. Clay Christian Holmes Robert H. Wayland III

Enclosure

cc: OSWER Managers

MARK E. BRADLEY, M.D., M.P.H.
OCCUPATIONAL MEDICINE
9316 FALLS BRIDGE LANE
POTOMAC MARYLAND 20854
U.S.A
(301) 299-8826

October 20, 1989

Dr. Rufus Morison
NFFE Local 2050
EPA UN-200
Washington, DC 20460

Dear Dr. Morison;

In this letter I am responding to five questions asked by the Union in reference to your requested review of the Westat-EPA Health Survey.

1a. Are EPA employees in immediate health danger?

Yes. Some EPA employees are at immediate health risk, particularly those with respiratory illnesses. There is strong indication that many employees have hypersensitivity pneumonitis, occupational asthma and irritant-intoxication syndromes.

b. If so, what are your recommendations?

My letter to Administrator William Reilly contains several recommendations that directly address this question: 1) bring in outside experts: NIOSH, Dr. Kay Kreiss and/or university experts in occupational health to make recommendations for the immediate and longer term problems, (peer selected occupational health experts engaged to assess the range of problems); 2) The use of alternate workspace is not an adequate solution to mitigate these health hazards; 3) thoroughly clean the HVAC units, replace air ducts, relocate air intakes away from pollution sources, increase ventilation rates to ensure maximum fresh air exchange, and correct the design deficiencies in all of the buildings and; 4) reduce the population density in the buildings from the present 5-6000 to the 1200 to 1500 level for which the WSM buildings are designed. (This would be expensive but it would solve many of the current crisis level health hazards in the building).

2a. Do you think there will be long term health effects?

Yes.

b. What long term effects do you project from the information from the survey?

I would project that members of the employee population will experience in increasing numbers, restrictive and/or obstructive lung disease, and post traumatic stress disorders. There may well be long term effects on other organ systems such as reproduction.

3. How do the prevalence (of symptoms) rates compare to expected rates for putatively "healthy" work space?

The prevalence of symptoms from the survey is astonishingly high. It is higher by an order of magnitude than I expected.

4. From the study what is your view of the EPA workplace as to morale, motivation, productivity, etc.?

The EPA HQ workplace is dirty and underventilated in places. It is overcrowded and poorly maintained. It is surprising that the workforce is able to maintain morale. Employees are amazingly dedicated under extremely adverse circumstances.

5. What are the major design flaws in the study?

The study shows very little direction and focus in terms of the design. It fails to address major areas of long term health problems related to pollution, ventilation, etc. It fails to address standard epidemiologic questions such as morbidity (number of visits per year to medical practitioners, hospitalizations, etc) and mortality rates. It does not identify specific "hot spots".

Sincerely,

Mark Bradley

Mark E. Bradley, MD, MPH

From: Linda Lee Davidoff, Ph.D.

To: Rufus Morrison, Ph.D.
fax: 382-7886

Re: EPA Employees Indoor Air Quality Survey

1. I believe that employees at EPA are at increased risk for illness. The survey suggests that many employees are already experiencing acute effects, including headaches, respiratory complaints, sinus congestion, mucuous membrane irritation, and central nervous system dysfunctions.

My recommendations would be to remove people temporarily to a building that is well ventilated while the current headquarters are remodeled so as to greatly increase air exchanges, vent fumes from specifiable sources of pollution, remove sources of pollution that cannot be vented, and adopt stringent policies to minimize all sources of indoor air pollution.

2. The health effects of chronic low level exposures to pollutants are not always reversible. The data from the TEAM study suggest that chronic exposures to low levels of VOCs contribute to the risk of reproductive problems and cancer. Such levels may also contribute to hypersensitivity disorders including hyperreactive airways and an ill defined condition, which we are studying, called multiple chemical sensitivity.

See recommendations under #1.

3. The data suggest that at least 1 out of every 3 workers feels that their health is effected to a substantial degree by the work environment at EPA. While I am not familiar with studies of worker health and morale in "healthy work spaces," I would guess that the rate of perceived health effects at EPA is very high relative to a healthy work space.

4. The survey suggests that worries about health due to indoor air contaminants and illnesses, which are perceived as work related, contribute to missed work and to leaving work early in a substantial number of employees. It is ironic that the agency that is supposed to be protecting the quality of the air is perceived as doing the precise opposite. I would guess that cynicism is high and morale low and that productivity must suffer as a consequence.

5. Design flaws: The survey did not focus enough on health effects, which were the ultimate topic of interest. There should have been in depth information on illness in the workers who perceive their health to be compromised by the work place.

THIS PAPER REPRESENTS THE VIEWS OF THE AUTHORS AND THE NATIONAL FEDERATION OF FEDERAL EMPLOYEES LOCAL 2050. THIS UNION REPRESENTS THE PROFESSIONAL EMPLOYEES AT HEADQUARTERS, U.S. ENVIRONMENTAL PROTECTION AGENCY. THIS PAPER DOES NOT REPRESENT THE OFFICIAL VIEWS OF THE AGENCY. THE DATA USED IN THIS PAPER WERE GATHERED BY THE UNION AND BY STAFF SCIENTIST OF THE AGENCY DURING AN ON-GOING INVESTIGATION OF AN OUTBREAK OF ILLNESSES AT THE WATERSIDE MALL OFFICES OF EPA, AND WERE USED BY THE UNION IN PURSUING REMEDIES FOR THE INJURED EMPLOYEES.

CARPET/4-PHENYLCYCLOHEXENE TOXICITY: THE EPA HEADQUARTERS CASE

Bill Hirzy, Ph.D. and Rufus Morison, Ph.D
National Federation of Federal Employees Local 2050,
Washington, DC

Introduction

This is a paper about the interfaces among science, public policy, occupational health and labor relations.

For the past 24 months the Environmental Protection Agency has been conducting an unusual experiment. The question under study was: "Let's see what happens when we introduce a source of 4-phenylcyclohexene into a marginal indoor air environment in which ca. 5000 people work for 8 to 10 hours per day. The results are in, and we, as union officials responsible for representing the test animals in this study, now publish the first portion of them.

In a nutshell, according to Dr. Mark Bradley, a well known occupational physician specializing in pulmonary and immune systems disorders, who was on subcontract to EPA to investigate employee health complaints from November 1988 through April 1989, we now have a health emergency at EPA headquarters with adverse health effects likely in the long term among EPA employees. Based on a health survey conducted in February, 1989, results of which will be released in mid -November, Dr. Bradley concludes, "There is strong indication that many employees have hypersensitivity pneumonitis, occupational asthma and irritant-intoxication syndromes".

Background

Now for the background and experimental details of the Agency's testing of carpet safety/toxicity on its employees. A clipping from the September 15, 1989 issue of The Washington Times, reporting the agency's decision to start removing the carpet, is included here to give the reader a flavor for the experimental zeal of EPA's Environmental Health and Safety Office in the work. You will notice in this clipping the two voices of EPA management: the first is spoken as one might expect a potential defendant to speak,

The Washington Times

FEDERAL REPORT

EPA to remove troublesome carpet at Waterside

By Marie Belson
THE WASHINGTON TIMES

The Environmental Protection Agency's decision to rip out carpeting at the complaint prone Waterside Mall will hopefully reduce the number of health related complaints, management said yesterday

"Although unable to establish a scientific link between the carpet and employee problems, EPA decided to remove the carpeting in rooms with high frequencies of employee complaints," the EPA said in a statement

The carpet will be removed from those rooms at the EPA headquarters office, 401 M St SW, by Sept 24, David Weitzman, director of the Environmental Health and Safety Division, said after the decision was announced Wednesday

"There is one room in particular where the carpet will be removed," Mr Weitzman said "Room 2827 is that specific room Other rooms we're still identifying based on the amount of symptoms people have reported We recognized that some rooms continue to be complained about"

The cost of the removal "won't cost a whole lot," Mr Weitzman said "Not a large amount of money"

Management will attempt to determine what effect the removal has on employees' health problems

"I'm very interested in seeing if the rate of complaints changes after removal," Mr Weitzman said "The freshly manufactured carpet clearly caused the initial illness, but it's not clear if it still caused it after two years"

The carpet will be replaced by vinyl floor tiles The glue used should not affect air quality and most work will be done at night in order to air out the rooms, Mr Weitzman said.

More than 100 EPA employees out of the 5,700 who work at the Waterside Mall have complained of dizziness, rashes, headaches, nausea, disorientation, memory loss and throat and eye irritations since the carpet was first laid two years ago. The severity of employees' illnesses has varied.

When complaints began to multiply, the EPA asked the Labor Department to expedite workers' compensation claims. The agency also permitted some of the affected employees to work at home. Others were assigned to other buildings.

Although air quality has been an EPA issue since the building was first leased in 1972, employees say it worsened after the carpet was laid between the autumn of 1987 and the spring of 1988

Air quality problems have in part been caused by the large number of workers and equipment in the building, the building's owner, Bresler and Reiner, Inc., has said. The problems are compounded because air ducts are blocked by desks and equipment

Several studies, including those conducted by EPA management, concluded that the adhesive used to lay the 27,000 square yards of carpet released the toxic compound 4-phencyclohexene, or 4-PC.

Union officials at EPA had urged management to remove the carpet since it was first laid almost two years ago After the recarpeting was suspended in April 1988, the EPA rejected union demands for the carpet's removal

"Employee complaints, which formed the basis of this action by EPA management, have been in EPA's hands since May 1988," said William Hirzy, president-elect of the National Federation of Federal Employees. "We just wish they'd done it a year ago, which would have preserved the health of employees that have been injured."

Management officials yesterday asked the two unions at EPA — the NFFE and the American Federation of Government Employees, Local 3331 — to inform them of other problem areas.

"That's a move in the right direction and I'm happy the experiment on our employees has come to a halt," Mr. Hirzy said.

"Twenty people were injured by negligence," said NFFE Senior Vice President Rufus Morison. "The actuality is people were injured after the installation of the carpet. It's pretty strong evidence."

EPA hired a technical team — independent of unions and management — to pinpoint the problem spots in the building. A health survey was conducted in February to survey the areas of employee complaints, NFFE said.

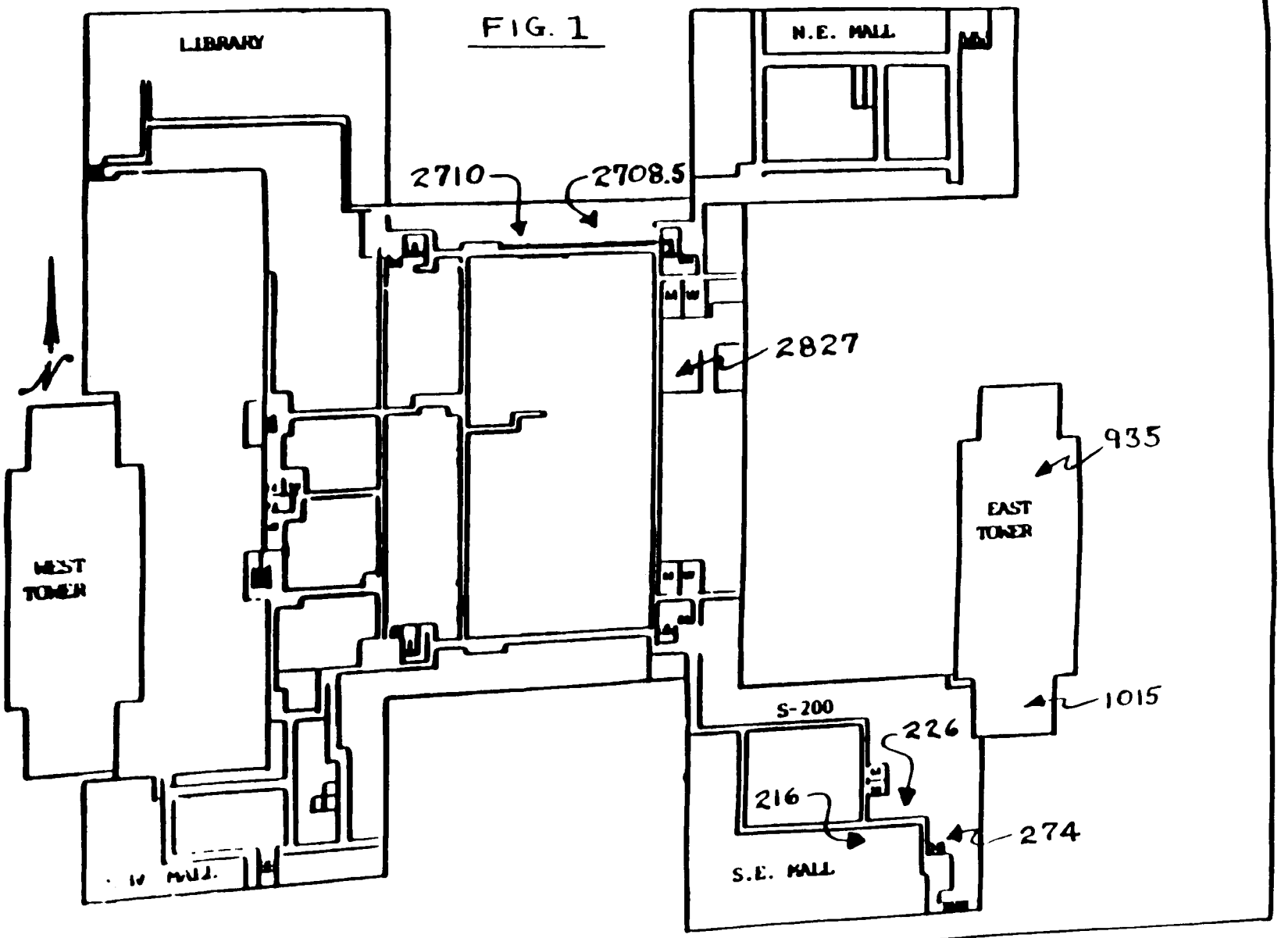
"We think [EPA acted] because there's a lot of bad news coming their [management's] way from the health survey," Mr. Hirzy said. "This exemplifies the political — as opposed to scientific bases — for EPA's actions and inactions that have so angered the public, the Congress and EPA's own staff."

Management said it tried to resolve air-quality problems by spending $1 2 million on equipment over the past four years.

EPA's Waterside Mall lease with Bresler and Reiner, Inc., ends in 1992, but the General Services Administration will most likely renew the contract and the headquarters will continue to occupy the building Mr. Weitzman said.

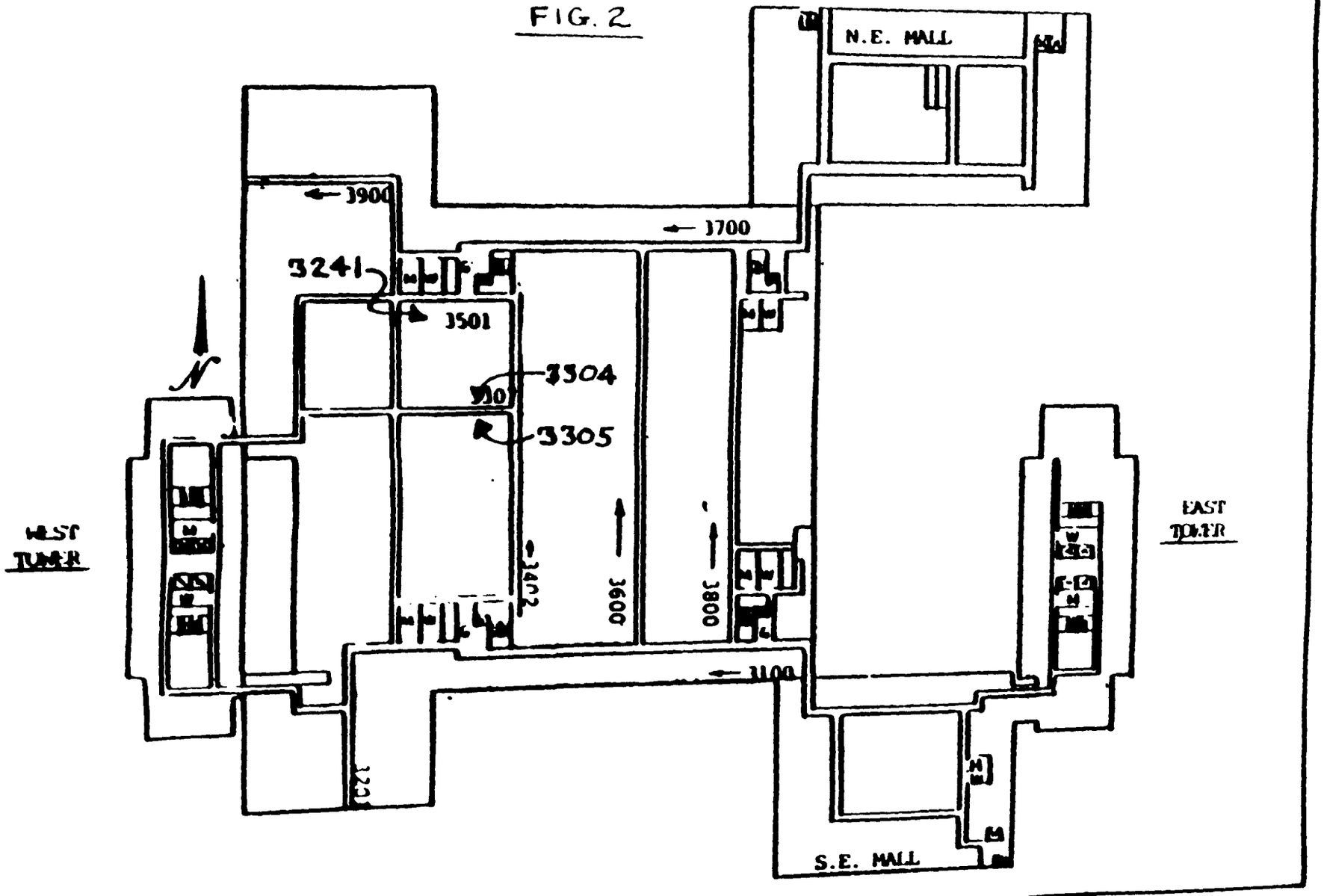
WSM 2ND FLOOR MALL

FIG. 1



WSM 3RD FLOOR MALL

FIG. 2



"Although unable to establish a scientific link between the carpet and employee problems, EPA decided to remove the carpeting ...."; the second is spoken as one might expect a thoughtful, observant scientist to report interim findings of a toxicology experiment, "The freshly manufactured carpet clearly caused the initial illness..... I'm very interested in seeing if the rate of complaints changes after removal" (of the carpet).

Exposure/Health Complaint Data

Beginning in October, 1987 EPA installed at Waterside Mall ca. 27,000 square yards of Grand Entrance III and Tuff One II, manufactured by Ebsco Mills, Dalton GA.

Diagrams of the Waterside Mall (WSM) complex are included as Figures 1 and 2 to help orient the reader and to point out the locations where air monitoring took place. Table 1 shows the total areas of the various sections of the WSM complex and the percent of those areas carpeted with the material in question.

As more and more carpet was laid, more and more complaints began to be registered by employees with their management and the EPA Health Unit. By January 1988, several employees had suffered severe reactions requiring hospital treatment, and EPA hired an industrial hygienist to compile reports of complaints and assess them. EPA also brought in its Emergency Response Team to monitor WSM air for volatile organic compounds usually measured at Super Fund sites, and measurement of formaldehyde levels were also made. Presence of 4-phenylcyclohexene was not suspected at that time, and it was not measured. (See Structure-Activity Considerations section.)

Table 2 gives a list of symptoms most commonly reported by employees. Hypersensitivity to a range of environmental factors began to appear in some of the most severely affected people. A meeting was held on April 27, 1988 at which the results of the ERT monitoring and the industrial hygienist's analysis of complaints were reported. The hygienist reported that some 60 or so employees had complained of health effects ranging in severity from irritation of eyes, nose and throat to induction of multiple chemical sensitivity (MCS), a topic we were to learn much about

TABLE 1

DISTRIBUTION OF CARPET AND EMPLOYEES

Building Segment	Total Area Sq. Ft.	Area Newly Carpeted Sq.Ft.	Employees
East Tower	240,000	56,100	945
West Tower	220,000	41,000	737
Mall-2	150,000	29,100	490
Mall-3	150,000	11,300	615
NE Mall	132,000	16,900	536
SE Mall	48,000	33,900	274

TABLE 2

SYMPTOMS EXPERIENCED BY EMPLOYEES

Burning Eyes	Memory Difficulty
Chills	Unusual Fatigue
Chest Wheezing	Nausea
Runny Nose	Nervousness
Sneezing	Difficulty Concentrating
Cough	Depression
Fever	Dizziness
Chest Tightness	Ligtheadedness
Hoarseness	Blurred or Double Vision
Sore Throat	Numbness
Joint Pain	Menstrual Problems

AND

Hypersensitivity to environmental agents resulting in one or more of the above symptoms

TABLE 3

EMPLOYEES WITH SYMPTOMS BY LOCATION

Building Segment	Percent Newly Carpeted	Employees in New Carpet Offices	Symptomatic Employees	Symptoms Linked toCarpet
East Tower	23	220	16 (198)*	10
West Tower	18	137	8 (103)	5
Mall-2	19	95	18 (98)	14
Mall-3	8	46	16 (135)	8
NE Mall	13	68	13 (70)	5
SE Mall	71	193	10 (96)	9

* Parenthetical numbers derived from February 1989 survey (The 10/30/89 presentation did not include these parenthetical data)

over the following months. EPA contended to complaining employees that the monitoring showed WSM air to be "as good as the air in your living room, so what's the beef?" This management attitude predictably precipitated a firestorm of protest, especially when it was reported next day in The Washington Times by a reported who attended the meeting.

The union immediately upon the conclusion of the meeting wrote to Assistant Administrator Charles Grizzle asking for a halt in carpet installation. This was done. However, management refused at that time, and continued to refuse until September 14, 1989, to remove any of the carpet in question.

In May, 1988 and again in June, August and November, air monitoring was conducted for a range of VOCs in selected carpeted and un-carpeted rooms. 4-Phenylcyclohexene was measured during these sessions. These May-November measurements complemented those taken in March, 1988 of formaldehyde levels. The formaldehyde and 4-PC results are shown in Table 4. Results for other VOCs are shown in Table 5. (Documents from which the data in Tables 4 and 5 were taken are cited in the Data Sources and Pertinent Literature Section.) The most remarkable finding was that 4-PC was the single chemical uniquely associated with carpet in WSM, and that 4-PC was the only chemical found whose levels declined significantly over the period of monitoring. In essence, 4-PC was the single chemical uniquely tied to the appearance of the illnesses that employees reported began with installation of the carpet.

The results of 4-PC measurements showed that employees who worked in carpeted areas were exposed to initial concentrations in the range of ca. 1-15 ppb. This is explained in Figure 1, which shows the levels of 4-PC in SE-226 from May through August, 1988. Employees generally did not re-enter carpeted space for about 7-10 days following carpet laying. SE-226 was carpeted in late April, 1988, one month prior to the monitoring. Extrapolating the decay curve back ca. 30 days gives our estimate of the likely initial exposure level in that room. (A projection to the November level in SE-226 is shown, derived from 4-PC measured in a nearby office [SE-274] in November, because SE-226 was not monitored in November.

FIG. 3

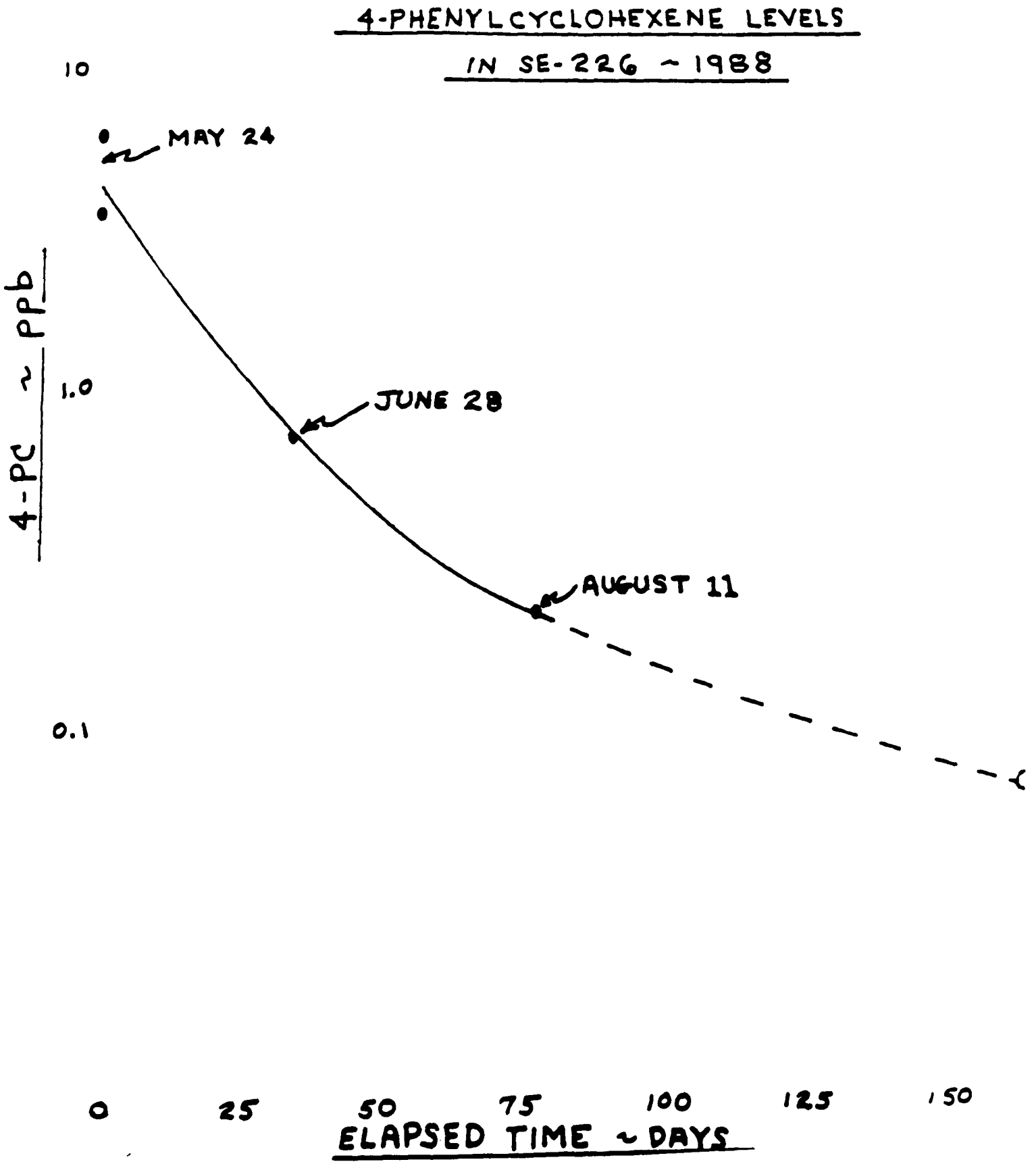

4-PHENYLCYCLOHEXENE LEVELS
IN SE-226 ~ 1988
10
1.0
0.1
4-PC ~ ppb
MAY 24
JUNE 28
AUGUST 11
0
25
50
75
100
125
150
ELAPSED TIME ~ DAYS

TABLE 4

FORMALDEHYDE AND 4-PC LEVELS IN SELECTED ROOMS
MAY THRU NOVEMBER 1988

Room	Carpet Laid	Formaldehyde (ppb) May	June	Nov.	4-Phenylcyclohexene (ppb) May	June	Aug.	Nov.
SE-216	none	NS	NS	NS	.04-.2	NS	NS	NS
SE-226	4/88	<4	NS	NS	3.7-6.7	0.8	0.2	NS
SE-274	4/88	7-49	NS	ND-20	0.7-1.3	NS	NS	.07
M-2710	none	ND-59	2.4	ND	ND	ND	ND	ND
M-2708.5	unk.	<4-37	NS	NS	2.6-3.9	0.6	NS	NS
M-2827	3/88	ND-46	NS	ND	0.4	NS	NS	ND-0.1
M-3304	none*	<4	NS	NS	0.2	NS	NS	NS
M-3241	4/88	6-59	NS	NS	1.7-1.8	ND	NS	NS
E-1015	none	<4	NS	NS	.03-0.3	NS	NS	NS
E-935	4/88	<4	NS	NS	0.6-0.9	NS	NS	NS

* Carpet laid across the hall, M-3305 in 3/88
ND = not detected
NS = present, but not quantifiable

TABLE 5

VOLATILE ORGANICS IN SELECTED ROOMS

Room	Carpet Laid	Compound in ppb					
		CH_2Cl_2		1,1,1-$Cl_3C_2H_3$		C_2H_4	
		May	Nov.	May	Nov.	May	Nov.
SE-216	none	.04-1.7	NS	.2-6.3	NS	.1-0.8	NS
SE-226	4/88	2.1-4.9	NS	1.1-5.8	NS	.6	NS
SE-274	4/88	ND-1.1	.9-4.5	.5-3.	.3-1.9	.3-.5	.5-1.2
M-2710	none	.3	.9-8.	.3-3.3	.5-1.	ND	.6-1.1
M-2708.5	unk	1.9-2.1	NS	.2-1.	NS	NQ-.2	NS
M-2827	3/88	1.2-6.3	1.5-8.9	.5-3.	.3-1.7	.3-.8	.6-.7
M-3304	none*	1.4-2.6	NS	1.7-12	NS	.3-.8	NS
M-3241	4/88	.4-1.3	NS	.3-5.1	NS	.1-.2	NS
E-1015	none	.3-9.1	NS	.3-4.	NS	.1	NS
E-935	4/88	.5	NS	.2-.3	NS	.02-.1	NS

*Carpet laid across the hall in M-3305, 3/88
ND = not detected
NS = not sampled
NQ = present, but not quantifiable

TABLE 5 CONTINUED

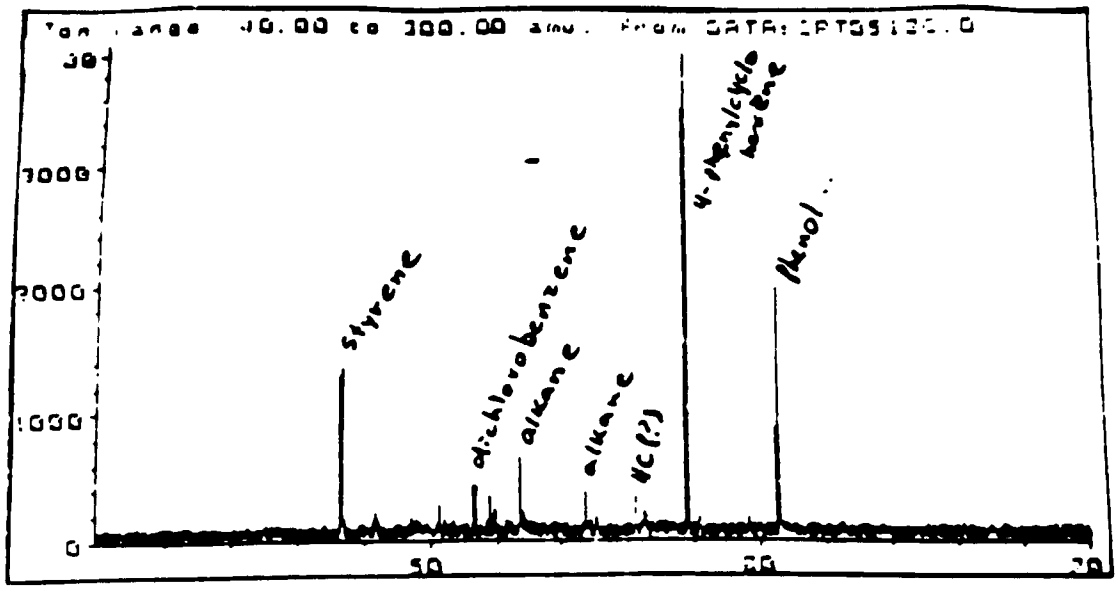
Room	Compound in ppb							
	CH_2ClCH_2Cl		$CHCl_2CCl_3$		$C_6H_5CH_3$		CCl_3CCl_3	
	May	Nov.	May	Nov.	May	Nov.	May	Nov.
SE-216	ND	NS	ND	NS	1.3-2.9	NS	.2-.5	NS
SE-226	ND	NS	.1	NS	4.9-11	NS	.6-.9	NS
SE-274	ND	ND-.4	ND-.1	NQ-.3	4.3-5.9	1.7-4.3	.8	ND-1
M-2710	ND	ND-.6	ND	ND-.3	.3-10	1.3-3	1.3-5	NQ-.4
M-2708.5	ND-NQ	NS	ND-.1	NS	3-6.7	NS	1-5.3	NS
M-2827	ND	ND-.7	ND	ND-.4	.1-3.1	1.8-3	.4-.6	NQ-.9
M-3304	ND-.1	NS	.03-.1	NS	5-8.7	NS	1.2-13	NS
M-3241	ND	NS	ND-.1	NS	.6-8.9	NS	.1-1.5	NS
E-1015	ND	NS	ND-.3	NS	.7-4.7	NS	.7-.8	NS
E-935	ND	NS	ND	NS	5.7-5.8	NS	.8	NS

TABLE 5 CONTINUED

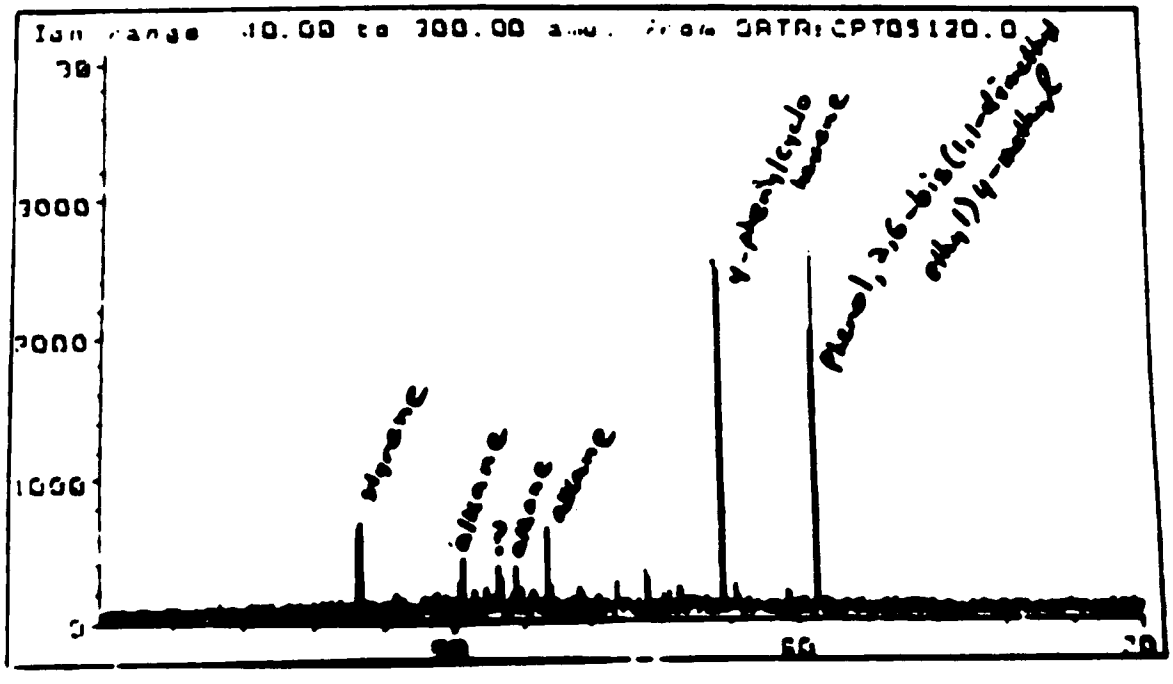
Room	Compound in ppb					
	Xylenes*		Styrene		Other VOCs**	
	May	Nov.	May	Nov.	May	Nov.
SE-216	.9-2.5	NS	.2-.9	NS	4-22	NS
SE-226	2-2.3	NS	.2-.3	NS	37-52	NS
SE-274	2.6-3.7	1.3-3.3	.5-.6	NQ-.3	36-41	14-52
M-2710	2.1-3.2	.6-1.7	.3-.5	NQ-.3	12-13	10-38
M-2708.5	1.3-3.4	NS	.2-.5	NS	48-54	NS
M-2827	2-4	1.4-2	.4	ND-NQ	15-182	8-32
M-3304	2.6-2.7	NS	.3	NS	70-161	NS
M-3241	3.1-3.5	NS	.5-.6	NS	31-40	NS
E-1015	1.4-3.2	NS	.1-.4	NS	14-49	NS
E-935	2.4-4.2	NS	.5	NS	35-43	NS

* Includes ethylbenzene
**Chiefly unspecified alkanes, alcohols, and < 5 ppb acetone

FIGURE 4

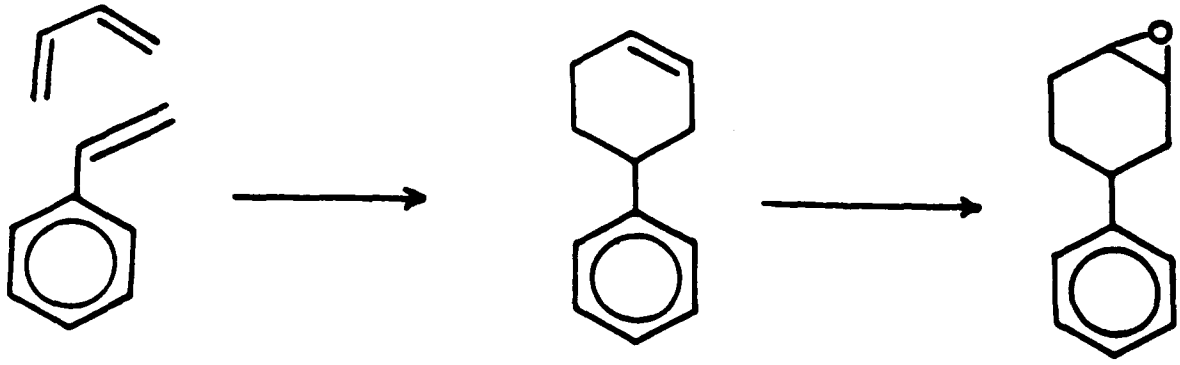


"New" Carpet



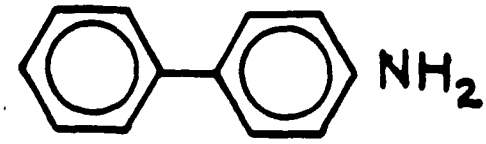
"Old" Carpet

4-PHENYLCYCLOHEXENE



ANILINE

4-AMINOBIPHENYL



PHENCYCLIDINE

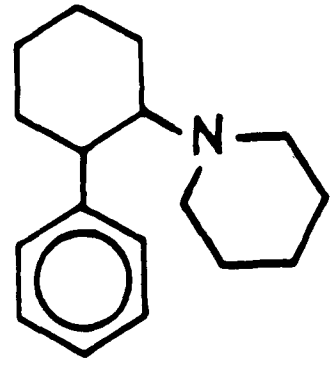


Figure 5

Figure 4 shows a comparison of 4-PC levels in new vs. ca. 6-month-old carpet.)

Structure-Activity Considerations

By April, staff of the Office of Toxic Substances (OTS) had uncovered a 1987 submission (see Data Sources and Pertinent Literature section) by Mark Van Ert linking 4-PC to complaints about building environments and new carpeting and reporting limited toxicological testing on the compound. The Agency's OTS structure-activity team, which analyzes limited data on new chemicals submitted under the premanufacture notification program of TSCA, reviewed Van Ert's submission and literature on structural analogues of 4-PC and its likely primary metabolite, 3,4-epoxycyclohexyl-1-benzene. We also reviewed literature citations from TOXLINE on cyclohexene and epoxycyclohexene, and we considered the difference in carcinogenic potency between aniline (weak) and 4-aminobiphenyl (strong). This latter point speaks to a steric similarity in the comparisons between cylcohexene/4-PC vs. aniline/4-aminobiphenyl as regards reactivity toward genetic matter and de-toxifying enzyme systems. These reviews lead us to conclude that the likely primary metabolite of 4-PC would be expected to be a fairly potent inhibitor of certain enzymes and to be reactive toward DNA and\or cellular proteins.

Recommended Risk Control

Based on the temporal and spacial link between carpet, 4-PC and employee illnesses, the initial 4-PC exposure levels, and generally accepted criteria for establishing putatively "safe" levels for toxic agents, we propose that indoor air standards be set for 4-PC that would protect against induction of MCS and against acute irritancy responses. The derivation of those recommended levels is shown below:

RECOMMENDED INDOOR AIR STANDARD FOR
4-PHENYLCYCLOHEXENE

TO PROTECT AGAINST INDUCTION OF MULTIPLE CHEMICAL SENSITIVITY

Lowest Observed Effect Level = 5 ppb

Factor to derive No Observed Effect Level = 10

Factor to account for more sensitive individuals = 10

Factor to account for uncertainty re: cumulative dose effects, actual LOEL and severity of multiple chemical sensitivity effect = 10

DERIVED INDOOR AIR STANDARD = .005 PPB

TO PROTECT AGAINST ACUTE IRRITANCY EFFECTS

Lowest Observed Effect Level = 5 ppb

Factor to derive No Observed Effect Level = 10

Factor to account for more sensitive individuals = 10

Factor to account for uncertainty in LOEL, lesser severity of irritancy compared to MCS = 3

DERIVED INDOOR AIR STANDARD = .017 PPB

In addition to the indoor air standard, we recommend, via a TSCA section 21 petition that: 1) testing be required on finished latex and carpeting to establish a product-content standard for 4-PC that will assure compliance with the indoor air standard; 2) quality control records be maintained and procedures put in place to assure compliance with product-content standards; and 3) notification be given of the risks associated with 4-PC levels above those specified in the standards; and 4) products containing 4-PC at levels greater than the standards be re-called.

We do not content that 4-PC is the cause of every case of MCS, nor do we contend that all carpet or all styrene-butadiene latex is hazardous, nor that these products cannot be manufactured, sold and used safely. We do contend that under the conditions existing at WSM in the time period in question, exposure to 4-PC at levels of ca. 10 ppb resulted in induction of MCS and irritancy responses in EPA employees.

DATA SOURCES AND PERTINENT LITERATURE

Exposure Data:

1. A Final Summary Report on the Indoor Air monitoring Performed at USEPA Headquarters, Washington, D.C. on November 6-8, 1988. Singhvi, R., Turpin, R.D., and Burchette, S.M. U.S. EPA, Edison, NJ. February 17, 1989.

2. A Final Summary Report on the Indoor Air Monitoring Performed at USEPA Headquarters, Washington, D.C. on May 24, 25 and June 29, 1988. Singhvi, R., Turpin, R.D. and Burchette, S.M. U.S. EPA, Edison, NJ. October 25, 1989.

3. A Final Summary Report on the Indoor Air Monitoring Performed at USEPA Headquarters, Washington, D.C. on March 4 and 5, 1988. Singhvi, R., Turpin, R.D., and Burchette, S.M. U.S. EPA, Edison, NJ. August 18, 1988.

4. An Indoor Air Quality Measurement Study at the Headquarters Facility in Washington, DC. Highsmith, V.R., Rodes, C.E., Hoffman, A.J., and Pleil, J.D. U.S. EPA Research Triangle Park, NC. July 15, 1988.

5. Evaluation of Organic Emissions from Waterside Mall Carpets and Office Partitions. Memorandum from Bruce A. Tichenor to David J. Weitzman. August 25, 1988.

6. Identification and Characterization of 4-Phenylcyclohexene--An Emission Product from New Carpeting, FYI Submission No. OTS-0288-0596 to U.S. EPA, Washington, DC. January 8, 1987.

EPA Employee Injury Data:

1. Testimony of Steve Shapiro before the U.S. Senate Committee on Environment and Public Works, Subcommittee on Superfund, Ocean and Water Protection, on S. 657, The Indoor Air Quality Act of 1989.

2. Interview Summaries Collected by Mark Ennen. Received by NFFE Local 2050 from EPA Management August 18, 1988.

3. Analysis of Short Form Health Survey of NFFE Local 2050. Hirzy, J.W. June 1988.

Multiple Chemical Sensitivity:

1. Report of the Ad Hoc Committee on Environmental Hypersensitivity Disorders. Thomson, G.M., et al. Ministry of Health, Ontario, Canada. 1985.

2. Workers with Multiple Chemical Sensitivities. Occupational Medicine, State of the Art Reviews. Vol. 2 Mark R. Cullen, Ed. (Philadelphia, Hanley and Belfus, 1985).
3. Nervous and Immune System Disorders Linked in a Variety of Diseases. Barnes, D.M. Science 232, 160, 1986.

4. Asthma as an Axon Reflex. Barnes, P.J. The Lancet 242, 1986.

5. Pavlovian Conditioning of Rat Mucosal Cells to Secrete Rat Mast Cell Protease II. MacQueen, G., Marshall, J., Perdue, M. Siegel, S., Bienenstock, J. Science 243 83-85, 1989.

6. Toxic Carpet II. Beebe, G. Available through Glen Beebe, c/o Toxic Carpet, P.O. Box 399086, Cincinnati OH 45239.

Structure-Activity Relationships: 4-PC and Cyclohexene:

The following are exemplary of 30 references cited on TOXLINE.

1. The Significance of Multiple Detoxification Pathways for Reactive Metabolites in the Toxicity of 1,1-Dichloroethylene. Anderson, M.E., Thomas, O.E., Gargas, M.L., Jones, R.A., Jenkins, L.L. Toxicol Appl. Pharmacol. 52, 422-432, 1980.

2. Excretion of Methyl Mercury in Rat Bile: the Effect of Diethyl Maleate, Cyclohexene Oxide and Acrylamide. Refsvik, T. Acta Pharmacol. Toxicol. 42, 135-141, 1978.

3. Isolation and Characterization of an Active DNA-Binding Metabolite of Benzo(a)pyrene from Hamster Liver Microsomal Incubation System. Wang, I.Y., Rasmussen, R.E., Crocker, T.T. Biochem. Biophys. Res. Commun. 49, 1142-1149, 1972.

Citizens' Complaints:

1. Telephone/Mail Logs of J. W. Hirzy, 1988-1989. 43 Phone calls, 4 letters involving 77 individuals self-reporting MCS, plus a clinical psychologist reporting "many patients" presenting with self-reported MCS.

2. The Reactor. Editor: Susan Malloy. P.O. Box 575, Corte Madera, CA 94925.

3. Responses to advertisements by G. and S Beebe. See above for contact address.

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