

P U B L I C H E A R I N G

before

SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

on

SENATE BILL NO. 3035
(Cancer Control Act)

Held:
June 24, 1977
Senate Chamber
State House
Trenton, New Jersey

MEMBERS OF COMMITTEE PRESENT:

Senator Alene S. Ammond (Chairwoman)

Senator John M. Skevin

ALSO:

David C. Mattek, Research Associate
Legislative Services Agency
Aide, Senate Committee on Energy and Environment

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UNITED STATES

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

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OFFICE OF THE ASSISTANT ATTORNEY GENERAL
WASHINGTON, D. C.

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SENATE, No. 3035

STATE OF NEW JERSEY

INTRODUCED JANUARY 24, 1977

By Senators SKEVIN, McGAHN, MARESSA and MARTINDELL

Referred to Committee on Energy and Environment

AN ACT concerning the control of carcinogens and the protection of the public from cancer by the Department of Environmental Protection and by the Department of Health and establishing a Cancer Control Council with certain duties, and making an appropriation.

1 BE IT ENACTED by the Senate and General Assembly of the State
2 of New Jersey:

1 1. This act shall be known and may be cited as the "Cancer
2 Control Act."

1 2. The Legislature finds and determines that New Jersey has one
2 of the highest overall mortality rates for cancer in the Nation;
3 that for a large number of different cancers, the State of New
4 Jersey as a whole and many counties within the State rank signifi-
5 cantly above the National average; that some cancers are trouble-
6 some, painful and treatable while most others are serious and
7 potentially fatal; that the economic costs of cancer are immense,
8 including the cost of hospital care, doctor bills, medication and the
9 loss of production from and salaries of affected workers; and that
10 the social and psychological costs to the victims of cancer and their
11 families are enormous.

12 The Legislature, therefore, declares that the cumulative losses
13 of the State's citizens shall be counteracted by a major research
14 and regulatory program administered by the State Departments
15 of Health and Environmental Protection in conjunction with the
16 Cancer Control Council established herein.

1 3. For the purposes of this act, unless the context clearly requires
2 a different meaning:

3 a. "Cancer" means a malignant tumor characterized by poten-
4 tially unlimited growth with local expansion by invasion and
5 systemically by metastasis.

6 b. "Carcinogen" means a substance or agent producing or
7 inciting cancer and shall include every substance or agent identified
8 as a probable or proven human carcinogen by the National Institute
9 of Occupational Safety and Health pursuant to Public Law 91-596.

1 4. The Commissioner of Environmental Protection, with the
2 approval of the Cancer Control Council, shall formulate, promul-
3 gate, amend or repeal rules and regulations prohibiting, condition-
4 ing and controlling the release of carcinogens onto or into the
5 atmosphere, waters or lands of this State in such quantities which
6 cause or may tend to cause adverse effects on man or the environ-
7 ment and the production, manufacture, sale and labeling of
8 products containing carcinogens which cause or may tend to cause
9 adverse effects on man or the environment.

1 5. The Commissioner of Health, with the approval of the Cancer
2 Control Council, shall formulate, promulgate, amend or repeal rules
3 and regulations prohibiting, conditioning and controlling the use
4 of products containing carcinogens which cause or may tend to
5 cause adverse effects on the health of their users or on any other
6 persons.

1 6. No person shall produce, manufacture or use or release onto
2 or into the atmosphere, waters or lands of this State any of the
3 following carcinogens: 4-nitrobiphenyl, alpha naphthylamine, 4,
4 4-methylene bis (2-chloroaniline), methyl chloromethyl ether, 3,
5 3-dichlorobenzidine, bis-chloromethyl ether, beta naphthylamine,
6 benzidine, 4-aminodiphenyl, ethyleneimine, beta propiolactone,
7 2-acetylaminofluorene, 4-dimethylaminoazobenzene, N-nitro-
8 sodimethylamine, asbestos, vinyl chloride.

1 7. a. There is hereby created in the Department of Environ-
2 mental Protection a Cancer Control Council which shall consist of
3 seven members, three of whom shall be the Commissioner of
4 Environmental Protection, the Commissioner of Health, and the
5 Commissioner of Labor and Industry, or their designees, who shall
6 serve ex officio, and four citizens of the State representing the
7 general public to be appointed by the Governor, with the advice
8 and consent of the Senate. The members shall select a chairman
9 and vice chairman of the council from the members representing
10 the general public.

11 b. Of the four members first to be appointed, one shall be ap-
12 pointed for a term of 1 year, one for a term of 2 years, one for
13 a term of 3 years and one for a term of 4 years. Thereafter all
14 appointments shall be made for terms of 4 years. All appointed
15 members shall serve after the expiration of their terms until their

16 respective successors are appointed and shall qualify, and any
17 vacancy occurring in the appointed membership of the council
18 shall be filled in the same manner as the original appointment for
19 the unexpired term only, notwithstanding that the previous in-
20 cumbent may have held over and continued in office as aforesaid.

21 c. Members of the council shall serve without compensation, but
22 shall be entitled to reimbursement for expenses in attendance at
23 meetings of the council and in performance of their duties as
24 members thereof.

1 8. The Cancer Control Council shall be empowered to:

2 a. Approve or disprove of any rule or regulation or any alter-
3 ation thereof, proposed by the Commissioners of Environmental
4 Protection or Health pursuant to section 4 or 5 of this act.

5 b. Study the State programs which may relate to the cause or
6 cure of cancer and to make those recommendations to the concerned
7 commissioner and to the Legislature which it deems necessary for
8 the proper conduct and improvement of such cancer related
9 programs.

10 c. Hold public hearings at least once each year in regard to
11 existing or proposed cancer control statutes, rules, regulations
12 and programs and upon the state of the art and technical capabili-
13 ties and limitations in cancer control and report its recommenda-
14 tions thereon to the concerned commissioners and Legislature.

15 d. Recommend that the concerned State department grant any
16 moneys made available to it by future legislation or by the Federal
17 Government for cancer research projects to the most qualified
18 applicants and to those applicants proposing to perform the highest
19 priority research.

1 9. The Departments of Environmental Protection and Health
2 shall have power, in addition to those granted by any other law, to:

3 a. Conduct and supervise research programs for the purpose of
4 determining the causes and cures of cancer and the effects and
5 hazards of the distribution and use of carcinogens on man and his
6 environment; and in furtherance of this research effort the com-
7 missioner shall consider, as a primary source of assistance the
8 American Cancer Society, the College of Medicine and Dentistry
9 of New Jersey and Rutgers, The State University;

10 b. Conduct and supervise Statewide programs of cancer control
11 education including the preparation and distribution of information
12 relating to cancer control;

13 c. Enter and inspect any building or place, except private
14 residences, for the purpose of investigating an actual or suspected

15 violation of law relating to carcinogens and ascertaining compliance
16 or noncompliance with any rules, regulations or orders of the
17 department and for the purpose of investigating suspected health
18 hazards, documenting exposures, conducting epidemiological
19 studies to establish a casual relationship between a suspect
20 carcinogenic substance and cancer and to cooperate with the
21 National Institute of Occupational Safety and Health and the
22 Occupational Safety and Health Administration;

23 d. Receive or initiate complaints of violations of applicable laws,
24 rules, regulations and orders relating to carcinogens and institute
25 legal proceedings for the prevention of such violations and for
26 the recovery of penalties, in accordance with law;

27 e. Cooperate with, and receive money from, the Federal Govern-
28 ment, the State Government, or any county or municipal govern-
29 ment or from private sources for the study and control of cancer.

1 10. If any person violates any of the provisions of this act or any
2 rule or regulation promulgated pursuant to the provisions of this
3 act, the concerned department may institute a civil action in a court
4 of competent jurisdiction for injunctive relief to prohibit and
5 prevent such violation or violations and the said court may proceed
6 in the action in a summary manner.

7 Any person who violates the provisions of this act or any rule,
8 regulation or order promulgated pursuant to this act shall be liable
9 to a penalty of not more than \$3,000.00 for each offense, to be
10 collected in a civil action by a summary proceeding under the
11 Penalty Enforcement Law (N. J. S. 2A:58-1 et seq.) or in any case
12 before a court of competent jurisdiction wherein injunctive relief
13 has been requested. The Superior Court, County Court and county
14 district court shall have jurisdiction to enforce said Penalty
15 Enforcement Law. If the violation is of a continuing nature, each
16 day during which it continues shall constitute an additional,
17 separate and distinct offense.

18 The concerned department is hereby authorized and empowered
19 to compromise and settle any claim for a penalty under this section
20 in such amount in the discretion of the department as may appear
21 appropriate and equitable under all of the circumstances.

1 11. Whenever an agent of either department finds, or has
2 probable cause to believe that any carcinogen is being produced,
3 manufactured, sold, labeled, released or used in violation of any
4 provision of this act or any rule, regulation or order promulgated
5 pursuant to this act, he may affix to such substance a tag or other
6 appropriate marking giving notice that such substance has been

7 detained or embargoed, and warning all persons not to remove,
8 dispose, or use such substance until permission is given by his
9 department or a court. It shall be a violation of this act for any
10 person to remove, dispose, or use any detained or embargoed
11 carcinogen without such permission.

1 12. The powers, duties and functions vested in the State Depart-
2 ment of Environmental Protection or the State Department of
3 Health under the provisions of this act shall not be construed to
4 limit in any manner the functions, powers and duties vested in
5 either department under any other provisions of law.

1 13. If any provision of this act or the application thereof to any
2 person or circumstance is held invalid, the remainder of the act
3 and the application of such provision to persons or circumstances
4 other than those to which it is held invalid, shall not be affected
5 thereby.

1 14. This act shall be liberally construed to effectuate the purpose
2 and intent thereof.

1 15. There is hereby appropriated for the administration of this
2 act the sum of \$500,000.00 to the Department of Environmental
3 Protection and \$500,000.00 to the Department of Health.

1 16. This act shall take effect immediately.

STATEMENT

Mortality and morbidity rates for cancer in New Jersey are among the highest in the Nation. The high incidence of cancer in New Jersey must be reduced to protect the health and welfare of the affected persons and our society as a whole. This bill authorizes the Commissioners of Health and Environmental Protection with the approval of the Cancer Control Council, to regulate the production, manufacture, sale, labeling and use of carcinogens and the release of carcinogens into the environment in order to protect the environment and the health of our people.

VII R-8

Senate
Committee Amendments

to

Senate Bill No. 3035

Amead:

Page	Sec.	Line	
2	4	3	Omit "prohibiting,"
2	5	3	Omit "prohibiting,"
2	6	1-8	Omit entirely
2	7	1	Renumber sections 7 through 16 as sections 6 through 15

SENATOR JOHN M. SKEVIN (Acting Chairman): Good morning, everyone. My name is John Skevin. I am a State Senator from District 38 in Bergen County. This is a public hearing on Bill 3035, before the Senate Energy and Environment Committee. The Chairman, Senator Alene Ammond, has had some car difficulties this morning and has asked me to start the public hearing because of the large number of witnesses that we have this morning -- or, rather, the entire day.

In any event, we will proceed with the hearing and other members of the Committee will be with us very shortly.

The bill we are considering this morning is one of the most important legislative bills to come before the 197th Session of the Legislature.

This bill was drafted by the Senate Commission on the Incidence of Cancer after a period of public hearings and meetings by that Commission. The Commission itself held a public hearing on this bill. As a result of that hearing, we recommended amendments removing the absolute prohibition on the manufacture, use, and emission of sixteen suspected carcinogens. The control and conditioning of the manufacture, use, and emission of carcinogenic substances remain the heart of this bill.

Some business groups will tell you today that the Federal Government, through its Occupational Safety and Health Act and Toxic Substances Control Act, has complete power and authority to protect the New Jersey citizen and worker from any problems arising from the use of carcinogenic substances. However, the Federal Government has not and is not protecting New Jersey citizens and workers from the highest incidence of cancer in the nation. New Jersey needs an independent capability for dealing with all aspects of cancer in New Jersey and to protect its citizens and workers.

This premise is even supported by the chemical industry, when it comes to other bills proposed by the Commission - for instance, the Cancer Registry Act and the Early Detection of Cancer Act. Gentlemen, I say to you, now, we must have independent authority and a well-funded, aggressive program to identify and control the indiscriminate use of carcinogenic substances in New Jersey in order to protect our citizens and workers.

Let us, throughout these hearings, keep before us the frightening statistics with which we must deal:

1. 14,000 people die annually from cancer in New Jersey;
2. 24,000 new cases of cancer are discovered each year in New Jersey;
3. Eventually, one out of every six New Jersey residents can be expected to die from cancer;
4. One out of every four New Jersey families will be touched by tragedy and lose a loved one to cancer; and
5. Our State, annually, loses over one billion dollars in economic growth directly attributable to cancer; and
6. The situation gets progressively worse.

These facts demand action. What can New Jersey do? The Commission has recommended to the Legislature a six-bill package, the most important of which is the Cancer Control Act before you today. I recommend that the Committee further strengthen this bill:

1. By requiring industry to substitute, wherever possible, non-carcinogenic chemicals for carcinogenic chemicals; and

2. By including specific "right-to-know" language which would inform workers in chemical plants as to exactly what type of material they are handling and the potential dangers and consequences thereof.

The argument that the State Departments of Environmental Protection and Health have the authority to do that which is proposed in this bill is inaccurate. As a practicable matter, the Federal take-over of the OSHA Program has removed from the State any role in conditioning and controlling the manufacture or use of carcinogenic substances in order to protect workers.

The unconscionably high rates of cancer in New Jersey and the excruciating impact on affected New Jersey workers, citizens, and their immediate families demand the initiation of a comprehensive program at the State level to reduce the incidence of cancer in New Jersey. The Senate Commission on the Incidence of Cancer has proposed such a program. Enactment of this bill - which is the heart of that program - would have a significant impact in reducing the high incidence of cancer in New Jersey, without seriously affecting the State's economy.

At this time, I shall expand briefly on a few aspects of this situation, which I believe I know most intimately.

The first point I want to emphasize is that the legislation now before you already is a compromise. Originally, as I mentioned previously, this legislation had called for the complete banning of substances labeled as carcinogenic by recognized governmental agencies. I personally still believe this might well be the proper course, as there appears to be ample evidence to indicate that there is no safe level for carcinogens - even a little is too much. However, I did not receive substantial support for such stringent action. Many groups, led by the chemical industry, campaigned vigorously against a complete ban and raised what I considered to be a smokescreen to obscure the real facts by speaking in terms of economic impact and job loss.

Our Commission had never intended to take away a worker's job. We have been trying to save his life. Nevertheless, confronted by a lack of solid support for a ban, I moved to amend this legislation to provide for more stringent controls rather than an outright ban. I felt compromise was indicated and necessary, that this bill was too important for its passage to be jeopardized by taking a hard-line stand without the full support of both industrial and environmental groups. However, now that we have given in to industrial pressure, now that we have weakened our proposal to require controls rather than a ban, the chemical industry's position seems to be that controls are not needed at all because the Federal Government has such requirements. In other words, the chemical industry first demanded we abandon our proposed ban because, in its opinion, the ban would have meant economic havoc in our State. When we gave in on that point and no longer insisted on a ban, the chemical industry then attacked controls, though the main basis for their argument no longer existed - the claim that a ban would cost jobs.

It is clear to me that the chemical industry intends to fight any legislation, be it controls or a ban, as long as that legislation represents a threat to their financial statements and their annual dividends. I must question, in view of the industry's unyielding attitude, whether their concern is for jobs or profits.

If I seem to be somewhat unkind in my attitude toward the chemical

industry's views, let me say that I am less than impressed by their facts and less than inspired by some of their methods.

As to their facts: One of the State's leading chemical companies published this so-called informative booklet - which I hold up here, "Facts About Chemicals and Cancer in New Jersey" - which it presumably distributed to all its employees as well as to community leaders around the State. The company was, understandably, concerned about the possibility of a ban on vinyl chloride.

This book is filled with "facts", "facts" about economics, the impact on the company's financial welfare, the contributions of the chemical industry to our society, and so forth. But, and I do not believe I can emphasize this too strongly - nowhere in this entire booklet does the company ever deny that vinyl chloride is a carcinogenic substance, nowhere does the company say it is not contributing to environmental cancer among our citizens. All it seems to be saying is that cancer, or, rather, death from cancer, is in some ironic sense a fact of life in New Jersey and that we cannot afford to combat it. Speaking for myself, that is a fact I refuse to accept.

As to the industry's methods: I have become the target of a campaign of intimidation financed and directed by the chemical industry. I have been served notice, in fact, that I will be unable to speak out on this subject at any place and at any time without a chemical industry representative being present to challenge my every statement. I was publicly told, before a luncheon meeting of business leaders in my home county of Bergen, by a representative of a chemical company, that he had been officially assigned to follow me around the State and to confront me with the chemical industry's own views on this subject. Of course, that is fair enough as long as we are dealing in facts. However, I believe that what we are seeing is an attempt to confuse the issue, to brainwash the people into the acceptance of environmental cancer as a necessary part of our affluent society.

If there are those who do not believe I have indeed become a target of the chemical industry, let me offer some further evidence. There are not many people in New Jersey who would be able to tell us the official designation by number of the legislation we are considering. When I recently appeared on a platform to discuss cancer before an audience of supposedly "ordinary citizens", provision was made for written questions. Some I received were as follows:

"Are you aware that Bill 3035 is itself a hazard?"

"Are you aware Bill 3035 will prohibit the use of kidney machines?"

Incidentally, that is a gross distortion because such specialized conditions can be easily handled.

"What proof do you have that the 16 chemicals you want to ban in S-3035 cannot be properly handled by the United States Government?"

"Why are you pushing for passage of S-3035?"

"Isn't it true that the New Jersey State AFL-CIO is against S-3035?"

And the rest of the questions, or at least the majority thereof, were so technical in nature, so calculated, it was obvious that the audience was packed.

Beyond that, there is a portion of my mail which indicates the existence of an organized effort.

And when I am told in confidence by a close friend within the chemical industry that I have been "marked for defeat" this November, I do not dismiss the possibility lightly.

I want to make it perfectly clear that I do not question anyone's right to oppose this legislation, be it an individual, a company, or a segment of our industrial complex. I do not question a company's right to assign one of its employees to tail me around the State in an attempt to insure that their side of the story is heard whenever possible. What I do question, however, is whether or not it is right to confuse the issue, whether it is proper to defend air pollution by pointing a finger at cigarette smoking, whether it is ethical to say that vinyl chloride should not be controlled because people do not exercise, whether it is in the public interest to claim we cannot afford to fight cancer because to do so would take away jobs.

If the chemical industry insists on following me around the State, then I think the time is coming when we should start following them in turn. I think the time is approaching when we should start asking our own questions as to just how much money this industry is making off these chemicals and why it cannot afford to put some of that money back into finding harmless substitute materials.

I think we are also entitled to know how much the chemical industry is spending in the battle against this legislation. How much, for instance, did it cost to print this literature? Who prepared it? Where did they get their so-called facts? To what budget was it charged? Was it "written off" as an advertising or promotional expense? Was a sales tax paid on the printing? I am by no means sure we do not need an investigation perhaps on a national scale before a United States Senate Committee, not a State Senate, to determine just what forces are aligned in the propaganda effort now being waged to convince Americans that we must accept pollution, accept dirty air, accept contaminated beaches, accept chemical substitutes in food, and, yes, accept the cancer that goes with it. I would like to know who is really pulling the strings behind the campaign calculated to make us believe it is really all our own fault anyway; it is not the fault of the automotive industry or the chemical industry. It is our fault because we do not exercise and because we breathe the only air available to us and because we buy the products forced upon us.

If these words seem harsh, then so be it. Maybe if the chemical industry is really looking for a fight, it has come to the right place - here in New Jersey where so many chemical companies are located and where victims of environmental cancer are being left behind in appalling numbers, numbers far exceeding the casualty rate in any overseas war.

As I said, I consider myself the target of a campaign of intimidation, but I do not intend to be intimidated. I hope this Committee, after having given careful consideration to all the testimony, will find itself convinced of the merits of this proposal.

It is time to begin fighting back against cancer. We can do nothing for those who are already dead as a result of environmental cancer, but we must do everything for those still living and in particular our children and our children's children.

The real issue is not to be found in the statistics existing today, it is in the statistics we would like to see tomorrow. If we are to change

those statistics, if we are to give future generations a chance to emerge from the shadow cast over all of us today, we must begin to fight back. With the passage of this bill, I truly believe New Jersey can help to provide leadership for the nation.

With those remarks, I would like to ask our legislative aide to read into the record any communications the Committee has received. Dave.

MR. MATTOCK: We have a communication from U.S. Senator Hubert Humphrey that reads: "I regret that previous engagements do not permit me to accept your kind invitation to testify at the public hearing scheduled by the New Jersey Senate Energy and Environment Committee. The high incidence of cancer in your State is a matter that appropriately concerns the New Jersey Legislature. Strong Federal and State leadership, working together with the private sector, is essential to achieve the kind of sustained commitment required to confront and combat this costly and tragic health problem. I wish you every success in this constructive effort. With best wishes, Hubert H. Humphrey."

We have a communication from Commissioner Horn of the Department of Labor and Industry: "Thank you for the invitation to testify at the public hearing on June 24, 1977 in the Senate Chamber. We would ask you to consider the comments contained on our previous testimony, submitted to you on February 18, 1977. We have nothing further to add at this time. Sincerely, John Horn."

SENATOR SKEVIN: As I said, initially, we have have a list of 49 witnesses. We are going to start from the top of the list and I ask that in view of the long list of witnesses, if you do have statements, the statements will become a part of the record and if you could limit your testimony - your oral testimony - to the highlights of your statement, then we will have an opportunity to hear all of the witnesses, perhaps, in one day.

The first witness I have on our list is Commissioner Ricci from the Department of Environmental Protection. I believe Dr. Preuss is going to testify instead of Commissioner Ricci.

P E T E R P R E U S S: My name is Peter Preuss. I am a special assistant to the Commissioner of the Department of Environmental Protection, who I am representing today.

Senator, I am pleased to appear once again in this Chamber to share our thoughts with you on an important area of cancer control. Prior testimony of the Department of Environmental Protection before the Senate Commission to Study the Incidence of Cancer in New Jersey, touched on the nature of the cancer problem, the way in which our lives may be affected by carcinogens in the air that we breathe, the water that we drink, and the food that we eat. We also discussed with you the programs that DEP initiated as part of Governor Byrne's multi-agency attack on the difficult task of identifying and monitoring the carcinogens to which people in our State are exposed, and how that exposure relates to the terribly high rate of cancer mortality in New Jersey.

Senator, I have also attached to my statement today a statement of Commissioner Ricci's, which was presented yesterday in Washington before the U.S. Senate Committee on Public Works and Environment, the Sub Committee on Environmental Pollution, which touches on these matters as well.

There are two significant factors which make my statement to you today unlike statements in the past. First, I come to you wearing two hats - that

of the Department of Environmental Protection and that of a representative of the Cabinet Committee on Cancer Control. Second, and of greater significance is the fact that today's hearing is being held by the Senate Energy and Environment Committee. Having worked with you, Senator, and with the Commission during the past year, I am aware of the many hours of hard work the members of the Commission have devoted to their task. It is gratifying, therefore, to be able to discuss today the first fruits of that labor and to consider the future direction our joint efforts should take.

Dr. Barry Commoner, Director of the Center for the Biology of Natural Systems at Washington University in St. Louis recently said that because of "...the unquestionable scientific evidence that most of the U.S. cancer incidents is due to environmental agents, the only possible prevention of the disease is to reduce contact with these agents."

That statement describes the reason why we are all concerned, and why I am here today. There are now, and I am sure that there will continue to be, sincere differences among those appearing here today as to the relative importance of the many sources of these cancer-causing environmental factors. But, irrespective of these differences, with this bill we recognize Dr. Commoner's statement, that we do something positive and constructive to "reduce contact with these agents."

We must continue our progress of the past year. Cancer care requires the expenditure of approximately one percent of our gross national product, the total cost to the nation being about \$18 billion per year. On a personal scale the cost to a patient who is successfully cured of his cancer is about \$13,000; the cost of a patient who is unsuccessfully treated, who eventually dies of his disease is about \$40,000. Therefore, even when we exclude all the other costs that society incurs due to the high incidence of cancer, it is clear that for every one percent improvement in the prevention of cancer, the direct savings to society are about \$200 million.

In addressing the bill before us today, I speak first of all as the representative of the Cabinet Committee on Cancer Control. We have reviewed this bill at length and have reached a consensus. Many of us have discussed many of the aspects of this bill with you, Senator. We fully support the purpose and the general outline of this bill. We would like, in addition, to propose several changes which we believe will make it more responsive to the problems and needs of cancer control. We hope that these revisions will help to successfully bridge the gaps in our programs, and to help them focus more fully on cancer control.

The bill would establish a Cancer Control Council. The Cabinet Committee believes that this Council should be a broadly based group of respected individuals who would advise and inform the individual departments on matters related to cancer control. We propose the Council be expanded to include individual departments, the Commissioners of Environmental Protection, Health and Labor and Industry, the chairperson of the Senate Commission to Study the Incidence of Cancer in New Jersey, and 11 public citizens to be appointed by the Governor with the advice and consent of the Senate. The Council would be authorized to study State programs, hold public hearings, and review the programs and plans of the individual departments.

The Cabinet Committee also recommends that the Cancer Control Council not have the power to approve or disapprove the promulgation of regulations

by the Department of Health and the Department of Environmental Protection.

Due to the leadership of Governor Byrne, this Legislature, our Congressional delegation, the Cabinet Committee on Cancer Control and the Senate Commission, New Jersey has already initiated a cancer control program unequalled among the states. An authoritative advisory Council could only enhance the effectiveness of this program. Such a Council could exercise well an overview of both public and private cancer control efforts in this State.

Our second proposal would include the Department of Labor and Industry in this program. Industry and labor are legitimately concerned with the possible economic effects of cancer; both the costs to the individuals affected, as well as the costs of control. The Department of Labor and Industry has expertise and knowledge in these areas, and an interest in the overall safety and health of the worker. Their advice should be included in the development of rules and regulations under this act.

Sound information and data are essential to sound planning and effective and successful program implementation. The Cabinet Committee on Cancer Control proposes the addition of a new section to the bill allowing the Department of Labor and Industry to respond to the public proposal of new regulations by DEP and the Department of Health by preparing and submitting an economic impact statement. This advisory statement would bring to the attention of the concerned department relevant detailed information which the Department of Labor and Industry feels should be considered, along with other responses to the public proposal of the regulations.

Finally, we would recommend that paragraph 11 be deleted. The tagging and detaining of carcinogenic substances would be of limited utility and, where necessary, could be done under existing statutory authority.

As the representative of the Department of Environmental Protection in this matter, I can tell you that the Department, through several of the operating divisions and agencies, already has in place many programs and regulations to limit emissions of some of these types of substances into the environment. These programs recognize the many diverse sources of pollutants, and therefore deal with industrial sources, emissions from automobiles, urban storm-sewer runoff, and many others. In addition, we have embarked on a program to identify the extent to which New Jersey residents are exposed to cancer-causing agents and to reduce such exposure. We know that such agents are present in the New Jersey air and water. The programs now underway will provide much of the information necessary to meet the goal of reducing the risk we now face.

Senate Bill 3035 will help us toward that end. Unlike other legislation, this bill does not focus on a medium that may become contaminated, such as air or water, or on a general resource such as open spaces or wildlife areas to be preserved for future generations. Rather, this bill focuses our attention on a real and specific problem which affects all of our lives - cancer - and upon the human beings who are at risk.

In summary, what we must do, and what S-3035 will help us do is:

1. To further identify the environmental factors related to the high cancer mortality rates in New Jersey.
2. To identify the agents to which the residents of the State are exposed.
3. To determine the best way to reduce such exposures, and then,

4. To proceed to implement those decisions.

The changes that we are suggesting will make this bill more self-sufficient, comprehensive and balanced, and will enable us to move rapidly to carry out its mandate - the reduction of the incidence of cancer in New Jersey. Thank you.

SENATOR SKEVIN: Thank you, Dr. Preuss. Senator Ammond is with us and I am going to turn the meeting over to the chairperson. I have no questions.

SENATOR AMMOND: I must apologize for being late but I had a car problem which you couldn't solve.

You know, this is a very serious problem and it costs society a lot of money on both ends. If people get cancer it is very expensive and the suffering of untold millions, of course, cannot be measured in any financial amount.

On the other hand, the economic impact on industry is also very serious. How do you propose, if we set down rules and regulations limiting or at least phasing out certain chemicals over a period of years, that we would assist industry in this matter financially?

DR. PREUSS: Well, there are two ways, if I might answer that question. The first one is that with the proposal, we have made it possible for the Department of Labor and Industry to prepare an economic impact statement on proposed regulations. We would be receiving the advice as to the economic cost, as best as that Department could figure them out. I think this is an important ingredient in making regulations.

In terms of the second half of your question, Senator, the aid to bear the cost of such controls, I believe that there are already in place several programs, such as the Economic Development Authority, which helped to fund pollution control devices which might be of aid to such industries.

SENATOR AMMOND: Thank you. Do you have any questions, Dave?

MR. MATTOCK: Yes, I have a question. Peter, this is the first time I have ever heard a member of your Department recommend that the Department of Labor and Industry have a direct role in evaluating the regulations proposed by your Department, in terms of an economic impact statement. Is this a major new departure or is there some type of involvement between the two Departments now in evaluating the economic impact of your regulations?

DR. PREUSS: Well, as you may be aware, in the past our Department has made every effort to include in its considerations of regulations, the economic impact. In doing this, we have worked within our own Department and we have also worked in the past, closely, with the Department of Labor and Industry in this matter.

I think here, in this case, we have - as Senator Skevin said - a controversial subject which many of us feel must be dealt with forthrightly. We do, however, want to be sure that we are including in our deliberations all of the possible relevant information before we decide. (see page 1x for Commissioner Ricci's statement)

SENATOR AMMOND: Thank you very much.

Once again, we would like to remind the witnesses that since we have approximately 50 people testifying, if you could keep your testimony down to highlights, or about 7 minutes, it would be in fairness to everybody.

Dr. Harry Demopoulos, New York University School of Medicine.

D R. H A R R Y D E M O P O U L O S: I want to thank you for allowing me to present some of the data, analysis, and thoughts, many of which were derived during a brief tenure as the Director of the Cancer Institute of New Jersey, but others that were also formulated in New York City as well as in consultation with members of the National Cancer Institute, like Dr. Frank Rauscher, the recent Director, and the President of the American Cancer Society, and members of the National Cancer Advisory Board.

My views, that I present here in part, are therefore not at all original, but they are an attempt at a synopsis that is offered with the hope that it might be helpful in your attacking a most serious problem that affects the lives, jobs, and profits - in that order of importance - of the people of New Jersey.

My concern is that if a "scapegoat" for if the real culprit is not pursued, then, in effect, what you might do through legislation is to allow the real culprit to continue to get away for a longer period of time with the resultant loss of more lives.

I think that the State of New Jersey and the Governor and the Senate - particularly Senator Skevin and his Commission - have unquestionably taken a laudable leadership role like no other state has taken and they are to be commended for tackling, forthrightly, a very major problem. It is, however, complex and I wanted to point out some of the complexities and some of the pitfalls that might arise in attacking the cancer problem.

I would also like to state that in the conclusion of my remarks there are some immediate mechanisms that can be taken through legislation, as well as other regulations, that can bring about an immediate reduction in the mortality and morbidity rates in New Jersey.

One of the first problems that I wanted to discuss is the elements of the cancer problem in New Jersey. The National Cancer Institute, under the aegis of Dr. Mason and Dr. Fromeni, conducted a study, county-by-county, gathering mortality data, depending on whether you were male, female, white, or non-white, and they came up with the conclusion that New Jersey, as a State, did lead the nation in mortality rates, overall, for the years 1950 to 1969. There is no refutation of that data. The data is absolutely valid as stated. However, the authors of that study did not design it to permit conclusions to be drawn, nor for any definitive actions to be made. The study was designed, like so many other experiments are designed, to provoke further thought and further study, not to provoke definitive action like legislation.

Now, if you scrutinize the data very closely, the overall cancer mortality rates - and this focused principally on white male deaths, since this was the preponderant number of cancer deaths. The overall cancer mortality rates for that group of citizens throughout the country was about 174 per 100,000 people. New Jersey's rate for that same category was 205, a rather substantial and frightening increase on top of the already horrendous 174 per 100,000. That is not a small number either for there are many other countries in the world, like Israel and other places, that have a far lower mortality rate for their citizens. So, 174 as a national rate is nothing to be proud of. We are already starting at a very high level and any further increases certainly are not to be tolerated.

However, I think it is quite easy to come to the assumption that

since New Jersey is the number one cancer state during that period of time and since the chemical industry is so concentrated in New Jersey, the two are necessarily closely related.

Now, if you look at controls which are the essence of a scientific approach to problems of this magnitude, the proper controls in evaluating the New Jersey data are to look at other demographic areas in the country that are not necessarily states, that have the same density of urban population and look at their cancer mortality statistics. New Jersey's population is the most urbanized in the country. That is a fact. If you look at similar concentrated urban areas, be they counties, cities, hamlets, or what have you, as controls, which may or may not have concentrations of industry in them, you come up with the finding that there are several locations, such as New York City, San Francisco, St. Louis, Washington, D.C., Miami, where the demography and the concentration of people and the age correction is all there and where these places lead New Jersey in terms of cancer mortalities and there is not any kind of heavy concentration of industry. So, it becomes difficult, for example, to understand why Nassau County - which is an eastern suburb of New York City - has a mortality rate of 212 per 100,000 people. New Jersey's is 205. San Francisco has 206 per 100,000. St. Louis is 220 per 100,000. New York City is 215 per 100,000. These are the cancer mortality rates.

In examining controls like this, one of the serious questions that comes up - and it has been raised by Dr. Fromeni and others who are familiar with the total data as well as the comparisons with controls - is that probably what has been demonstrated through the cancer mortality statistics of the National Cancer Institute is that if you can implicate anything or anybody, what it is is probably urbanization, particularly if you consider the fact that it takes 20 to 30 years to develop cancer. This has been well established by exposures to radio active substances and other chemical carcinogens. It takes that long in humans and they definitely do carry their ticking time bombs with them when they move. This was amply shown in Israel where native born Israelis, whether they are Arabs or Jews, enjoy a very low incidence of cancer. People that move there as adults from Western Europe or America, carry with them their native rates. Kids who move to Israel at the age of 6 or 7 and grow up there, have about one-half the rate, meaning that they have already been exposed in Western Europe or the United States to carcinogenic elements.

Now, the unfortunate aspect of the mortality study that was conducted by the NCI was that the time coincided with the suburban population explosion. New Jersey, during the years of the study, was the recipient of a massive exodus of people from New York City and Philadelphia - massive, urban, crowded centers. These people may very well have carried their incubating cancers with them.

The people that died from 1950 to 1969 were developing their cancers during the 1920's, the 1930's, and the 1940's. One of the defects in that study was that no address was gotten, as far as an address history is concerned. So, we don't know where the people came from.

For this reason, as well as for the fact that our studies have shown that if you do examine the mortality statistics and keep looking for a chemical industry relationship, there is a well defined pattern of industrially caused, or industrially related, cancers. You would expect to find higher rates of lung, larynx, liver, skin, and stomach cancers and, perhaps, leukemias and lymphomas. These are the characteristic ones that you get with the industrial

types of cancers.

If you look at New Jersey's mortality rates, they are high all the way across the board, including cancers of the breast, cancers of the colon, etc. So, there was no industrial pattern to the deaths. Furthermore, there was some interesting negative correlations. For example, New Jersey is supposedly known as the most benzene contaminated state in the nation. There is a tremendous amount of benzene pollution in the air. Benzene is unquestionably, in high concentrations, a dangerous carcinogen - in high concentrations. It will cause leukemias and lymphomas. Yet, in examining the New Jersey mortality data, that category of deaths of leukemias and lymphomas during that period of time was at the national average. It was not elevated. So, it doesn't make sense that industry would have been overwhelmingly involved in being responsible for the cancer mortality rates, at least as they were reported from 1950 to 1969.

There was a recent study that has been conducted through the aegis of a cancer control network that is composed of three major hospitals in this State, Morristown Memorial, Overlook and Elizabeth General. These hospitals banded together to do some conjoint voluntary work together and one of the things that they started to do was to compare numbers in their tumor registries. These hospitals are distinguished by having excellent tumor registries and they have a community based drawing field for their population. You would imagine that Elizabeth General, after normalizing all of your data by the number of cancers per 100-bed, or the number of cancers per whatever unit you want to have, would have proportionately more cancers that are industrially related, particularly since Exxon and other major corporate structures in the area refer their employee cancers to Elizabeth General and its affiliated clinics. To our surprise, the data has shown over the past several years, and up through 1976, that Elizabeth General actually has proportionately fewer lung cancers and proportionately fewer bladder cancers than either Morristown Memorial or Overlook. Now, that stunned us. We have examined the data. We compared it. It is still in the nature of preliminary data because it needs to be expanded and further refined, but it is, nonetheless, available. Gene Roddy, who is the Project Director for this area and the cancer control network, has conducted these analyses and would be available for further discussions, if you wish, on this question, which I think is a very important one and certainly is the kind of thing that you would want to do from the very nice bill that you have introduced regarding a statewide tumor registry, where you can go and compare, community by community, and do some very nice detective work as to how is causing what cancers at the present time.

I think that the mortality data of the NCI is outmoded. It is inadequate for the tasks that you would like to accomplish. And, I think that creating the Tumor Registry Bill was a major step forward. And, the question that arises from these kinds of discussions and thoughts is really, are you pursuing the real culprit with the bill that is presently under discussion - 3035? Are you perhaps diluting your effort by chasing after carcinogens, which unquestionably are carcinogenic but which may not, in fact, have anything to do with the cancer mortality statistics as we presently know them? It may prove to be the case but I think considerably more investigation has to be done before you can indict chemical carcinogens as a widespread factor.

The causes of most human cancers are known and I think there is

widespread agreement with Barry Commoner and with the Department of Environmental Protection that there is no question that most human cancers, and it is probably 80% to 90%, are caused by environmental factors. But, the definition of environmental factors includes things that are not really under discussion in the present bill. What Barry Commoner, Dr. Frank Rauscher, Dr. Lee Clark, the President of the American Cancer Society consider environmental factors really has to do with the personal environment. Cigarettes, by themselves, are responsible for 20% of the cancer deaths. In combination with alcohol, cigarettes and alcohol take an additional 10% toll. Fat in the diet and low fiber content, as well as the nitrites and nitrates in the diet are responsible for approximately another 25% to 30%.

Now, we already, at this point, know 60% of the causes - what causes 60% of the cancer deaths. These factors are nowhere mentioned in the present bill and I think one of the reasons is perhaps because you cannot legislate in areas that involve an individual's personal environment. It is difficult to legislate against a person who wants to smoke or drink to excess or consume nitrites and nitrates, there perhaps is an infringement on a person's individual rights. Well, as long as we pay group insurance rates and as long as we all share the burden of hospitalization costs, the fact of the matter is that people who don't smoke and don't drink and try to lead a reasonable life wind up paying, through their hospital payments, for the medical care costs of others who are unaware of the dangers of these items. And, it is not really a question of personal rights. There are many things that could be done in an educational capacity. I don't know why cigarette lounges are allowed in schools. I don't know why nitrite-nitrate-containing food substances are allowed in schools. I don't understand why alcoholism in excess - and I say in excess - is accepted. These are the major causes of cancer and you are not addressing them through your legislation and they are addressable by you as a State. You have unique powers as a State that the Federal Government does not have. You can establish mechanisms to influence schools; to bring about more education; to really prevent the overwhelming majority of cancers.

Industry and industry-related causes might amount to about 5% of the cancer deaths, at most. You have a much greater opportunity to attack a far greater number of cancers through preventive education, by encouraging school children to lead a rational lifestyle. You also have power to affect cigarette smoking and to discourage it. You don't have to ban it but there are things that you can do.

The final comment I want to make is to compliment you on some of the other legislation that has been proposed, such as the Tumor Registry and the Early Detection Bill that is under development. Early detection is one of your most immediate mechanisms for decreasing the prospective cancer mortality rates in this State. You can also decrease costs rather substantially. As an example, if you detect breast cancers when they are a centimeter in size, the prospective mortality rate in that population will be only 10%. You will cure 90% of the women. If the tumor is allowed to double in size to 2 centimeters, which is the common size at which it is currently being detected, the prospective mortality rate climbs to 40% to 50%, which means that you are going to lose nearly half the women.

The detection of a breast cancer at 1 centimeter does not require

mammography or any massive bureaucracy. It requires simple professional palpation that takes 8 to 10 minutes and costs \$6.00 and, in exchange for this, you will get a woman who will live, a woman who will be in the hospital for a shorter period of time. She will consume less of the third party payer's money. There will be fewer social service dollars given to that family because the woman is going to be alive and able to take care of her family and she will not die.

Now, this is not being done and it is a way for you to immediately attack the concept of the prospective cancer mortality rates. You can bring about an immediate reduction this year. And, your Early Detection Bill - I don't know what stage of development it is at - is, I think, a landmark piece of legislation and I disagree with you, John, I think that is a far more important bill than 3035 because you can save lives immediately.

That is all I have to say.

SENATOR SKEVIN: Harry, - Dr. Demopoulos - I am very much impressed, as I usually am. You have testified so articulately on prior occasions. I am very much impressed with your credentials. Incidentally, I would like to point out, for the record, that the Early Detection Bill was developed, really, from your testimony and your fine contribution. I want the public to know that.

I also want to apologize for failure to meet with you on several occasions. We have had meetings scheduled at my office and for one reason or another it is difficult for a busy person, like yourself, to get together. But, on July 8th we will get together at your request. I think we are going to talk about junk foods on that date.

DR. DEMOPOULOS: Yes. I look forward to it.

SENATOR SKEVIN: Okay. You have testified at least twice before our Commission and I detect a similarity in your testimony on prior occasions in terms of this particular bill. We think our whole legislative package is important and of course in the testimony, as I understand it, you don't feel industry is really responsible and early detection and the Tumor Registry is really the better program. I find a similarity in your testimony and Mr. Hansen's, who has testified before and who will testify this morning. You are pretty much similar in your positions. Mr. Hansen of the chemical industry also supports a Tumor Registry and early detection and feels similarly, like you do, that industry is not really that bad - the chemical industry in particular, in New Jersey.

Also, in your testimony - in my recollection of your testimony - you say that the urban areas have a higher rate in certain parts of our country - Washington, D.C., and other urban cities. It rang a bell someplace and I recall that that testimony was published in a booklet under your authorship, paid for by the State Chamber of Commerce, isn't that correct?

DR. DEMOPOULOS: Yes, they did replicate it after seeking my permission. It was a study that we had conducted - a portion of this I repeated-- We conducted that analysis while I was the Director of the Cancer Institute of New Jersey. They were given permission by me to replicate it because I didn't feel there was anything in there that should be hidden.

SENATOR SKEVIN: Right. But, they paid for it?

DR. DEMOPOULOS: I guess they did.

SENATOR SKEVIN: Okay. I am just curious, Doctor - and I know you are a busy person and you are a New York resident and you are attached to the New

York University and you have an excellent background in that type of thing - are you here in a representative capacity?

DR. DEMOPOULOS: Of NYU? No.

SENATOR SKEVIN: In any representative capacity?

DR. DEMOPOULOS: I am here in a representative capacity to - as the former Director of the Cancer Institute of New Jersey, during which time we spent a great deal of effort in analyzing the same kinds of data that have resulted in deliberations and legislation. I have no relationship as a consultant, even unpaid, to the Chamber, the Chemical Industry Council, and in spite of similarities to Chris Hansen, I think we have come to the same conclusions for different reasons and different motives. As I said at the outset, my concern is not profits nor is it jobs. It has been and always will be a concern for lives and, I repeat, if you chase the wrong culprit, the real guy is getting away with continuing murder. That is my sole concern.

SENATOR SKEVIN: So, we may conclude you are not here in any representative capacity?

DR. DEMOPOULOS: Only as an individual who knows the cancer field rather well. I put together the NYU Cancer Center. I got \$10 million for it from the National Cancer Institute and I have worked in the cancer field for the past 20 years, since I graduated from medical school.

SENATOR SKEVIN: All right. So, we may conclude that you are here as an individual?

DR. DEMOPOULOS: That's correct.

SENATOR SKEVIN: From the State of New York?

DR. DEMOPOULOS: Yes.

SENATOR SKEVIN: About our problems here in New Jersey?

DR. DEMOPOULOS: Yes.

SENATOR SKEVIN: Well, we really thank you, Doctor. You have really made a good contribution. Thank you.

SENATOR AMMOND: Doctor, I have a few questions. With respect to what you call junk food, could you specify a little more what falls into that classification?

DR. DEMOPOULOS: Yes, I would be happy to. Naturally, it will have different connotations for different people. My definition of junk food really has nothing to do with the nutritional aspects, okay? That is not my concern. I am a molecular pathologist and I am concerned with what kinds of chemicals people take in. The things that I would consider junk food are the substances that would contain nitrites and nitrates. For example, hot dogs, ham, and bacon contain nitrites and nitrates. In combination with meat, meat is rich in protein, which is made up of amino acids. The amino group of amino acids, combined with nitrites and nitrates, form nitrosamines, and this happens particularly when you heat these things. So, when you fry bacon or cook a ham, or grill a hot dog, you are forming miligram quantities of nitrosamines in a couple of strips of bacon or in a hot dog. That is miligrams. We consider things as dangerous carcinogens when they are in micrograms or pycnograms or nanogram quantities, which are thousandths and millionths of a miligram.

Now, children are consuming nitrosamines. Adults are consuming nitrosamines. And, there is absolutely no check on this. This is one of the major ingredients in what I would term junk food - stuff that contains nitrites and nitrates.

The foods that would contain artificial colors, wherein the artificial color is a coal tar derivative - and that is a very specific kind of color-- I am not talking about caramel coloring or some other colorings that are derived from other types of chemicals. The coal tars are very potent carcinogens and things that are structurally similar to the coal tar carcinogens really have no place in food or in candy. For example, red licorice has - a package of red licorice - gram quantities of coal tar derivatives as coloring. Now, it may no longer be Red Dye #2, it may be Red #40 or it may be some other red, but these are all structurally analogous. Some of these have already been banned in our country. The ones that we allow, curiously enough, are banned in England or in France because those countries have found them to be carcinogenic. If you were to pool the total banning of the so-called Western block of nations, you wouldn't have very many artificial colors that you could add to your food safely because scientists around the world have determined that virtually all of the coal tar derivatives are carcinogenic in mammals and not just by the Bruce Ames test, which is a bacterial mutagenic test.

So, that kind of very specific food coloring is another serious item that really should be controlled or, preferably, even eliminated, particularly from children who have no awareness and can't make a choice because of what is offered to them.

SENATOR AMMOND: What about water?

DR. DEMOPOULOS: Excuse me?

SENATOR AMMOND: What about water - H₂O?

DR. DEMOPOULOS: Well, there are, unquestionably, substances that are toxic that are found in the waters. Recently, some PBB has been found in some of the New Jersey waters and it is a matter of concern, I am sure. But, I don't think that in human carcinogenesis water-born carcinogens have played any kind of important role. If you look at a place like New York City, which is 212 per 100,000 cancer mortality rate, they have fairly decent water because they get it from reservoirs that are 60 to 80 miles north and relatively free of pollutants. They are getting cancers at much greater rates than most other urban centers. I don't know of any good epidemiologic data wherein human cancers have been pinpointed to known carcinogens present in the water. Many carcinogenic substances, when they are unleashed into the air or into the water, may undergo further chemical modification where they may become inactive. So, merely finding traces of these materials, doesn't necessarily give you an ability to relate it to the development of human cancers.

Some of the unconcentrated water specimens - I think it was from the Mississippi, or one of the tributaries - were used in the Bruce Ames test and found to be positive. This is scary. I think they did some interesting controls, where they took water samples from places that were rich in industrial effluents versus areas that were not rich in industrial effluents. They took this unconcentrated water sample - which is very important, that it was unconcentrated - and they put it into the bacterial mutagenic system and they came up with the fact that it was positive, especially in those sites that were rich in industrial effluents. Well, that is interesting data but, unfortunately, the nature of the test that was done is only a screening test. The Ames Test is, as you may or may not know, a test where the suspected material is mixed with ground up rat liver - okay? You take a rat. You kill it. You grind up

the liver. You make a paste out of it. It is called the homogenate in scientific terms. You then take an aliquot of that material and you add it to bacteria of the salmonella type - these are similar to the kinds that cause typhoid fever and other related ailments - and you note how much mutation you get in that bacteria as a result of being mixed with the liver paste that contains some of the suspected material.

Now, that is a far cry from human carcinogenesis. There are serious doubts that the Ames test could ever be used as a definitive type of carcinogen testing mechanism. It is valuable, however, in screening suspected materials and Dr. Van Duuren, a rather noted chemical carcinogenesis expert, has presented data to the National Academy of Sciences - one of the most august scientific bodies in the country - proposing - and I think they probably will accept his proposal - that carcinogens go through a multi-tier phase of examination, with the first step being a simple chemical examination by good chemists who can look at the structural formulas of the thousands of chemical compounds and pick out things that look structurally analogous to known carcinogens. Those would be subjected to the Bruce Ames test. If they are mutagenic there, then they should go on to mammalian testing programs, where they are either painted onto the back of an animal, put into the animal's food supply, or sprayed into the nostril and you study the animals for a year or two and see what kinds of cancers finally do develop. And, they have to be real cancers, not just tumor lumps. The PBB's for example, that were found do not cause cancers. They cause liver nodules, which may be just generating nodules or benign neoplasms. They are not malignant. So, you have to be careful even when you do animal testing to have your material examined by a pathologist who can tell you, "Yes, this lump is a cancer; it is not just a regenerating nodule."

SENATOR AMMOND: Doctor, when I was 16 and my mother was 40, I did not know one person in her peer group that that had breast cancer. Today, I am 40 - a little over - and I know at least 10 women that have had a breast removed. Now, we are supposed to be healthier, and stronger. We are living longer. Something is wrong. Now, let's start from base 0. I didn't mean to keep you so long as a witness and I am not going to put you on the hot seat because you are not responsible for all the ills of the world. But, it appears to me that everytime we go out to find a solution to a problem, whether it be government or cancer or health, we end up in an awful lot of bureaucratic red tape.

Now, there was a time when people did not have high levels of cancer and the air was cleaner and the water was purer and now you are telling me that there is little relationship that we know of between the chemical industry and big industry and the urbanized areas and cancer. I am very confused. I really can't follow it. My personal opinion is - I am not a doctor, I am just an average, everyday person like you are - I see millions of people suffering from cancer and I see that everytime someone tries to move ahead in an area, industry or someone else finds a new study to refute it and we get caught up in all sorts of medical terms and medical terminology and explanations about epidemiology studies, and so on and so forth. Are we really doing anything in the United States about cancer?

DR. DEMOPOULOS: Yes, we are. To answer your first question, cancer of the breast is one of the few cancers that has been at a plateau of incidence

and mortality for the past 30 to 40 years. Although your personal view that there is more of it is a very strong one, I can assure you, through statistics of the National Cancer Institute and the American Cancer Society, that cancer of the breast by 100,000 population is not on the rise and has been at a steady plateau.

There is a lot of good that is being done in terms of cancer of the uterus. If you look at cancer of the cervix - which is the lower part of the uterus - that used to be a major cancer killer in women. Now, if you look at the data over the past 20 years, deaths from cancer of the cervix are plummeting and they continue to go down, happily, every year and you can chart that precisely with the widespread use of the inexpensive and widely-used pap smear that not enough women take often enough. Now, that has done a lot of good. It is a \$5 to \$10 test, done once or twice a year in all women over the age of 35 and particularly on certain low income groups, where the rates are higher for that kind of cancer. We stand a fair chance of licking that disease, even though we don't fully understand it, by using early detection tests.

Now, the same is true with cancer of the breast. At NYU we conducted a study where we showed that when early detection clinics were operative, we were getting cancers of the breast that were one centimeter and we were curing those women. The minute the mammography scare came about, women stopped coming in and our average tumor sizes immediately started to increase - okay? So, there is unquestionable parallelism between early detection tests and saving lives. And, this is to answer your question, in part - "What are we doing?" We are saving lives through early detection.

Furthermore, the definition that cancers are caused by environmental agents - like nitrates, nitrites, fats and fiber - these were arrived at over the past five to ten years. It used to be thought, ten or fifteen years ago the viruses were probably responsible for human cancer. That theory has largely fallen by the wayside. So, we, in the scientific community, have defined what we believe to be the major causes of human cancer. They did not come about glibly. There are billions of dollars that have been spent in order for me to give you the testimony that I gave you, as far as what causes 60% of the cancers. Cigarettes and alcohol - those relationships cost a lot of money, not just on epidemiology but a lot of hard-nosed, bench-level research by hundreds of scientists. So, we have done a lot of good in the past 10 years and I think that we can do more good.

SENATOR AMMOND: Well, I would say that early detection is fine but prevention is better.

DR. DEMOPOULOS: You are absolutely right, but you have to prevent the ingestion of the major carcinogens, which are cigarettes, alcohol, fats, nitrites and nitrates.

SENATOR AMMOND: All right. Thank you.

MR. MATTOCK: Dr. Demopoulos, you repeated something in your testimony today that was made - the point was made to the Cancer Control Commission over the last months by many other people, that 80% to 90% of cancer mortality rates, I believe, are attributable in some way to the environment. Then you went on to indicate that tobacco, alcohol, and nitrosamines - in particular things in the personal environment - contributed over 50%, maybe 60%. Is that a substantial consensus in the scientific community also, that there is this

kind of a 60% rate related to things in the personal environment as opposed to the workplace or general environment?

DR. DEMOPOULOS: This is a consensus and I think for your own edification, if you wish, one of the nearby individuals that you might want to consult and who is sort of in a unique position, is Dr. Frank Rauscher. He is currently the Senior Vice President for Research at the American Cancer Society. He was the Director of the National Cancer Institute, up until November of last year, and headed that august outfit for the past several years, during its growth. He also happens to be a PH.d in virology. And, he confirms this, as do many other cancer experts at that level. This includes Dr. Lee Clark, who is President of the American Cancer Society and is a member of the three-man President's panel on cancer and is also the Director of the--

MR. MATTOCK: I don't think you need to mention individuals.

DR. DEMOPOULOS: These individuals and others like them, as well as the National Cancer Advisory Board, agree that 80% to 90% of cancers are environmentally induced and that 60% are caused by the combination of cigarettes, alcohol, fats and fibers in the diet, and nitrites and nitrates and, perhaps, some of the artificial colors. There is a good consensus on that.

SENATOR AMMOND: Thank you, Doctor. (see page 7x for Dr. Demopoulos's statement)
Mr. Charles Marciante, AFL-CIO. (no response) He is not in the Chamber.

Mrs. Diane Graves from the Sierra Club.

D I A N E G R A V E S: Thank you for the opportunity to comment on the proposed Cancer Control Act. My name is Diane Graves and I am Conservation Chairman for the Sierra Club's New Jersey Chapter.

The Sierra Club believes New Jersey's goal should be the maximum reduction of human exposure to carcinogens and other toxic substances, whatever the exposure route or factor - environmental, occupational, food-chain, or tobacco. The Cancer Control Act would be an important step in this direction. Therefore, the Sierra Club strongly supports S-3035 as amended to omit Section 6 and the other ban elements in the bill.

The all too frequent reports documenting some newly discovered chemical contamination seems likely to continue. There are many unknowns, in fact few knowns, regarding environmental cancer, but stringent regulations controlling and conditioning the release and use of carcinogens is a prudent course of action for New Jersey to take. It may ultimately prove necessary to prohibit the release and even the use of some substances as new information is found and evaluated. Meanwhile, if New Jersey reduces human exposure to carcinogens now, it seems plausible that eventually cancer incidence and the high death rate will be reduced.

Most of what is known about cancer in humans comes from the study of workers who have received concentrated doses. There is no reason to assume that the relatively low levels that escape from the workplace and are released by the manufacturing processes are safe. Little is known about the effects on people of chronic low-levels of carcinogens, the additive and synergistic effects of various pollutants by various routes, be it a little dose in the diet, a little dose in the air, or a little dose in the water, and the potency of pre-carcinogens and co-carcinogens. Scientists believe that any chemical that causes cancer in animals is presumed to be a cause of cancer in humans, regardless of the level of human exposure.

Testing and monitoring of water and air to determine when toxic substances are present and in what amounts, has just begun. Preliminary testing has already revealed the presence of carcinogens in New Jersey. We believe it would be irresponsible of the State to wait for positive proof that low-levels do, or do not, kill people. If we err, it must be on the side of human health protection. This makes economic sense, too. As you know, from testimony at previous hearings, the costs related to cancer are massive. You also know that cleaning up and through maintenance practices within industry creates jobs.

In addition to eliminating the ban provisions in S-3035, we urge the following changes - and I won't read the specific bill language that I have included in my statement.

As brought out at an earlier public hearing, the Sierra Club feels strongly that industry must be required to substitute non-carcinogenic for carcinogenic substances.

The Cancer Control Council should not be mandated to approve or disapprove the Departments of Environmental Protection and Health rules and regulations. The Council should advise and recommend.

It is essential that the citizens on the Council be bona fide representatives of public interest and labor organizations.

As we suggested in earlier testimony, we believe the number of citizens should be increased to include representatives from consumer, environmental, health, independent scientific, labor, industry, and medical groups.

The Council should report its findings and recommendations to the public as well as to the departments and the Legislature.

The provision for statewide programs of cancer control education and information distribution should include workers exposed to carcinogens, as well as the general public.

The specified \$3,000 penalty for violating the Act's provisions should be increased to at least \$10,000.

In the event of a violation, citizens should have the right to bring suit if either DEP or DOH fails to act within a reasonable time.

Again, we believe authorizing the Departments of Environmental Protection and Health to condition and control the release and use of carcinogens is fully warranted by existing information and represents prudent public policy and action. We urge prompt passage of S-3035. Thank you. (see page 23x for amendments)

SENATOR SKEVIN: I have no questions. Thank you.

SENATOR AMMOND: I don't either, Dianne. Thank you very much.

Commissioner Joanne Finley from the Department of Health, or a representative.

RONALD S. ULINSKY: I am Ron Ulinsky, Special Assistant for Cancer Control to Dr. Finley.

Thank you for inviting the Department of Health to participate in this public hearing of the Senate Energy & Environment Committee. The priority of controlling cancer in New Jersey must be second to none. We must address the problem as rapidly as possible, using the efficiency of sound, logical scientific information.

New Jersey is known to have one of the highest overall mortality rates for cancer in the nation. Therefore, the position of the Department of

Health is, the enactment of legislation, such as Senate Bill 3035, which, with the suggested additions and corrections stated by Dr. Peter Preuss of the Department of Environmental Protection, will support and reinforce our capabilities of controlling cancer.

As you know, there are many suspected chemical carcinogens for which there is insufficient evidence to be certain that they, in fact, incite cancer. The National Institute of Occupational Safety and Health has published a list of over 12,000 toxic substances, many of which are felt to be carcinogenic. There are, in addition, a limited number of substances for which enough evidence has been collected and analyzed for the Occupational Safety and Health Administration - which is OSHA - to set standards.

Before a standard is set by OSHA, NIOSH submits criteria documents providing scientific supportive evidence that a substance is indeed carcinogenic. These criteria documents take from 12 to 18 months to complete and the process costs several hundred thousand dollars. In order to establish even a casual relationship between a chemical substance and cancer, there has to be strong epidemiological evidence as well as confirmation resulting from animal studies. This implies a clear-cut statistical association between exposure to a substance and cancer.

The Department of Health is presently engaged in two such epidemiological studies supported by the National Cancer Institute and Federal Environmental Protection Agency.

Recently, relatively quick screening tests have been developed using bacterial systems called mutagenesis testing which assay a substance's carcinogenic potential. Because of the large number of toxic substances which we have little knowledge about and the fact that there are over 500 new chemicals introduced into industry annually, it is envisioned that these and other screening tests that should be developed will assume an increasing importance in setting priorities for further investigation of potentially carcinogenic substances.

The question of knowing what technology is adequate to control possible carcinogenic emissions from and within industries, the efficiency of such pollution controls and their cost, is a question which should be directed to the Departments of Environmental Protection and Labor and Industry. However, there are key roles which a properly supported Department of Health can play to assist the Departments.

The Department of Health laboratory is already equipped to do some toxicological analyses. Our laboratory presently does some testing via written agreement for the Federal EPA and our own Department of Environmental Protection. With an enhanced capability in the form of technician analysts and equipment, the Department of Health could serve the Department of Environmental Protection and the public by indicating whether emissions are hazardous enough to warrant forceful regulation.

Also addressed in S-3035 is the most important aspect of authority to test internal environments. The Department of Health believes more strongly than ever that the first magnitude of risk is to those exposed in the workplace. If something toxic is being emitted from smokestacks or discharged into waste disposal systems, imagine what it must be like inside where people are directly exposed to these substances without dilution 8 hours a day, year after year.

The epidemiologic studies the Department carries on will best indicate

to the Department of Environmental Protection where to concentrate their efforts. Recently, the Department of Health has provided assistance to OSHA and the Department of Environmental Protection in problems related to Mercury poisoning and possible incidence of disease in rubber workers handling vinylidene chloride. Because of the limited manpower available to OSHA, the Department of Health is often requested to assist in those investigations through our Epidemiological Intelligence Survey Officer assigned to the Health Department by NIOSH.

Senator Skevin's Cancer Registry Bill is a most necessary adjunct to these epidemiologic investigations. It is important to determine exposure histories in afflicted patients who are still living; a registry makes this possible. Where epidemiology points the way to a town or a section of a city or a population cluster with high incidence of certain kinds of cancer, then it becomes effective to pinpoint the source with monitoring techniques and to control it with technology, education, and technical assistance that will not stall the economy or deprive people of jobs.

We believe the interior of plants, the workers in these plants, and the communities involved must also be afforded protection through preventive action. Such action may be in the form of proper ventilation and disposal systems, protective clothing or devices, early human detection screening techniques and education at all levels.

We further feel New Jersey could speed up the national process of developing criteria documents. Existing powers that already allow the Department of Health to enter industries where a human health hazard is strongly suspected can then be more effectively and fairly exercised and the cooperation with NIOSH and OSHA in enforcing protective standards can be more fully recognized.

The worker is the true key to New Jersey's cancer control activities in that he is the one exposed to the highest concentrations of known or suspected carcinogens since he works longest and in closest contact with these agents. It is vital to study health effects of such exposures on the worker so that the results can be assessed and later applied to the general population. The same applies to improving on medical surveillance techniques with regard to cancer. The best known methods for medical surveillance should be made fully available to known high risk groups. Workers are captive groups and are high risk by nature of their exposure.

The concepts of the legislation before you can provide effective mechanism to carry out cancer control activities in a meaningful way. The Department of Health therefore supports the concepts and purposes of Senator Skevin's bill. Thank you.

SENATOR SKEVIN: Thank you. I have no questions.

SENATOR AMMOND: Thank you very much.

Mr. Chris Hansen of the Chemical Industry Council of New Jersey.

C H R I S H A N S E N: I am Chris Hansen and I appear here today in the capacity of Chairman-elect of the Chemical Industry Council of New Jersey. I am a chemical engineer by training and have worked in the chemical industry more than 25 years. I am most appreciative of the opportunity, Senator, to appear before this group on behalf of the chemical industry.

I would like to digress from my prepared remarks for just a moment. Senator Skevin alleged earlier that the chemical industry has used inaccurate

facts and data and that possibly we have distorted data. To the best of my knowledge, this is simply not true. I have yet to have one such instance brought to my attention. I also want to assure Senator Skevin that this is not a personal issue. We are not perfect, however, and we may, and probably will, make some mistakes, but, hopefully, they will be honest.

Senator, I am concerned - as is the industry - that we have not been able to discuss facts or data with a view of building an effective legislative program for reducing cancer in New Jersey.

Senator, it is true that we have been and will continue to work hard to bring out the facts and destroy distortions of the same. Senator, I believe this is the American system and it is our right and we will not be deterred or intimidated by impassioned rhetoric. At the same time, Senator, we pledge our support to help develop rational, meaningful cancer reduction programs. We continue to hope that we can find a common ground for reasoned, rational ways to work together on this important problem.

Since we are appearing before a new group, I will be repeating some of the facts and figures that we presented earlier to the Commission. I do think it is important that they be put into the record to the whole Committee.

New Jersey is the capital of the U.S. chemical industry, a field which has almost doubled in size in the past decade. Latest official data show that the chemical industry is the largest industry in the State of New Jersey, with 1200 chemical and allied plants and sales of approximately \$10 billion, which represents more than 10% of all chemical sales in the United States. Within the last decade, New Jersey's chemical industry has invested more than \$1.5 billion in capital equipment.

New Jersey's chemical industry employs about 130,000 people to whom it pays over one billion dollars annually. These employees are the industry's most important asset and its efforts to protect them is reflected by a very fine safety record. And, you can see this reflected in Table I, which is attached to my remarks. (see page 24x)

Studies have shown that chemical workers are healthier than the general populace. They have longer life expectancies and lower rates of cancer than the population in general. An exhaustive study entitled, "Determinants of Mortality" was done by the Dow Chemical Company at its large chemical complex at Midland, Michigan. This investigation, involving thousands of employees in many different chemical operations, supports these conclusions. Key data from this report is presented in Table II, which is attached for your information and the entire report is available from Dow on request. These overall gratifying results have been achieved in spite of a few unfortunate incidences of cancer and other health problems caused or aggravated by excessive exposure to certain chemicals. All known problems have been corrected and the industry keeps constant watch over the health of its employees in search of possible unknown problems.

Now, a recent example of this is an announcement by duPont, which involves employees manufacturing acrylonitrile. A copy of a news article from Chemical Marketing Reporter is attached for your information. This incident demonstrates that the industrial environmental cancer problem involves very small numbers of people with limited specific exposure as compared to the environmental cancer problem of the general populace which reflects all aspects of lifestyle exposures such as drinking, smoking, and diet. This fact must be

kept in perspective when considering legislative action and priorities.

The chemical industry is interested and concerned with all aspects of its operation with respect to the safety and health of its employees on the job, the people in the surrounding community, and the general population who are consumers of its products. We, as much as anyone, would like to have all of the facts contributing to cancer identified. We pledge our support to methods of study and courses of action considered most productive by a number of experts who have given testimony concerning this problem. They are:

1. Continuing studies by existing State and Federal agencies, together with industry, to insure that vigilance is maintained.
2. The establishment of close working relationships between State and Federal Governments to insure that meaningful and consistent regulations are developed nationwide.
3. Implementation of early detection programs which are said to be able to reduce deaths by as much as 50% in one year, as provided in S-3034.
4. The establishment of a Cancer Registry to help define unknown factors contributing to cancer, as provided in S-1758.
5. The establishment of an extensive and effective educational program.

On the other hand, S-3035 is, in our opinion, unnecessary and harmful legislation. S-3035 was wrong conceptually and no amount of refinement in language or modification will make it needed or workable. Inconsistent and unneeded regulation of chemicals in New Jersey, as would result from the enactment of S-3035, would not help solve the cancer problem and would wreck an industry which is contributing greatly to both the economic and physical health of our State - even in the cancer problem itself.

Weaknesses in the approach of S-3035 are made apparent by the following key points:

1. Several expert witnesses have testified that industrially-related and industrially-caused cancers are a very small part of the cancer death rate, maybe 5%, and a few tenths of one percent, respectively. Even these are the result of practices and technology used 20 to 30 years ago.
2. S-3035 would initially control only 16 suspected carcinogens. However, the mechanism is provided for non-technical personnel, with no staff, to control literally thousands of chemicals produced or used in the State.
3. S-3035 would cause economic havoc by closing virtually all chemical facilities in our State while nothing is done in other states, except to take our jobs and business.
4. This legislation would eliminate just about all of the chemical research done in the State, including pharmaceutical, some of which is in the area of cancer cure.

While the intention of eradicating cancer is noble, the method could be likened to throwing out the baby instead of the bath water.

S-3035 has already done much unnecessary damage to the State's already tarnished image as a place to do business and S-3035 has helped aggravate the high unemployment and slow economic growth in New Jersey. The enactment of S-3035 would cause much suffering and hardship to tens of thousands of chemical workers and their families to no avail. The chemical industry has, as has already been stated, spent \$1.5 billion in New Jersey in the last 10 years. If the

New Jersey chemical industry performed in the same manner as the rest of the country, it might have invested \$3 billion here. Obviously, New Jersey is losing ground, and I might say rapidly. This poor growth performance is the result of many things - the lack of petrochemical feed stock supply, higher energy costs, labor productivity, high taxes, and poor business climate. This climate includes attitudes toward industry exemplified in S-3035, which makes doing business in New Jersey more difficult than elsewhere.

Blaming cancer in New Jersey on the chemical industry is a "bum rap", in our opinion, and would do little or nothing in reducing cancer. Let's take one of the more important chemicals as an example of the economic effects of this legislation. Polyvinyl chloride products have been part of the industrial and consumer scene in the United States for more than 30 years. PVC has grown to be the second most widely used plastic in America. U. S. consumption in 1976 of PVC and its copolymers was approximately 4.65 billion pounds, compared with 27.3 billion pounds for all plastics.

PVC has long been familiar to the American consumer in such everyday items as floor tiles, curtains, shoes, phonograph records, house siding, umbrellas, raincoats, sporting goods, and so on. In the medical field, such PVC products as blood bags and surgical medical tubing have contributed to the saving of literally thousands of lives and the cost of PVC is reasonable.

There are in New Jersey, five plants engaged in the polymerization of vinyl chloride into PVC resin. In addition, some 141 plants in the State convert PVC resin into a variety of finished products. Thus, the passage of the proposed legislation would have the following effect on the industry in the State of New Jersey:

1. All five PVC polymerization plants would be forced to close immediately.
2. The 141 fabricating plants in the State would also be forced to close their doors.

Adding both segments of the industry together, the total effect would be: The closing of 146 plants; the loss of 25,640 jobs with almost \$500 million in payrolls; a local tax loss of \$11 million; a State tax loss of almost \$17 million; the loss of purchase payments totaling over \$500 million; and the elimination of over a billion-dollar-a-year industry from the State of New Jersey.

In short, passage would effectively destroy a billion dollar industry in the State.

It should also be mentioned that the legislation would eliminate the possibility for any future growth of the PVC industry in New Jersey. It has been estimated that within the next 20 years, the nation's demand for PVC will increase at least five fold and the loss in long-term growth to the State, both in jobs and revenue, would be significant, even without the beneficial effects of off-shore oil and gas supplies.

New Jersey leads all states in pharmaceutical research. The industry has about 18,000 people in it with payrolls of over \$800 million and it pays \$47 million a year in taxes. It invests millions of dollars each year in our State and is one of the few manufacturing industries which is growing in terms of employment and payroll.

Virtually all of the compounds specified in the proposed bill are

used in the course of pharmaceutical research and development.

Indeed, the U.S. Food and Drug Administration and the EPA require that several of them be used as standard controls in laboratory research on cancer. One of the great ironies of this bill is that in the process of trying to protect people from cancer, it would interrupt research which is seeking a cure for it. Before shutting down any chemical operation, the question needs to be carefully examined as to whether it can be controlled to safe exposure levels and whether its continuance will cause the loss of more lives that it saves.

Remember that chemical medicinals have done much to extend average life expectancies. Life expectancy at birth was only 15 years in Ancient Egypt; in Colonial America it was only 30 years and in 1850 it was 39 years. In 1900 it was 47 years, but in 1975 it was almost 72 years. In 1900 the largest killer in the United States was pneumonia and it required five weeks of hospitalization. Today, pneumonia deaths are relatively insignificant because of chemicals and virtually all cases are home treated. Similar results have been achieved with tuberculosis, influenza, appendicitis, syphilis, and rheumatic fever because of chemicals. Chemicals alleged to be carcinogenic are used in making many of these disease-curing medicinals which help permit us to reach 70 years of age, which longevity, by the way, gives cancer time to develop.

The life extension contributions of the industry are not limited to medicinals. For example, how many lives are saved by the excellent quality of today's friction elements which neither grab nor fade as they heat to 1000 degrees fahrenheit in stopping a car or truck? How many are kept from starving by the increased food production made available by fertilizers, pesticides, and herbicides? How many are saved by today's pharmaceuticals and plastic hospital devices? How many are saved with better automotive tires and better electrical wiring devices in housing and appliances? And what about the cleaner, more hygienic living conditions made possible by today's detergents? Some of these utilize chemicals alleged to be carcinogenic. Giving the much maligned vinyl chloride its due, how many lives are saved by the non-flammable Christmas trees, upholsteries, and electrical wire insulation? I do not have an answer for any of these questions, but it seems a practical certainty that the answer is a very large number.

We believe that emissions from chemical industry operations are already under close surveillance and are adequately controlled. Each vent, and all effluents from each plant must have permits from either State or Federal Governments, or both. We don't think responsible operators in the chemical industry have any uncontrolled or unknown emissions which might be causing a problem.

Chemical plants constructed during the past 15 years bear little resemblance to those plants built prior to World War II, due to the great strides made in technology. Blindfolded, the average person would not know he was in a chemical plant today. The vast majority of chemical workers today have nowhere near the levels of exposure that prevailed 20 to 30 years ago. And, the cancer statistics we are seeing now reflect exposure during that period.

As stated earlier, S-3035 duplicates existing legislation and has many technical weaknesses. I will not get into all of the details this morning, but I would like to emphasize a few points and ask that you please bear with me and turn to Appendix A for just a moment. It is in the back part of the prepared

remarks that I handed out, Senator. I would just like to direct your attention there to-- Have you found Appendix A? I would just like to call your attention to a couple of specific points and will leave the entire thing for your perusal at your liesure. For example, number one under Appendix A -- Section 4 of S-3035 requires the Department of Environmental Protection to formulate rules and regulations regarding release of carcinogens and regarding production, manufacture, sale and labeling of products containing carcinogens. The State Department of EPA now has authority under Section 26:2C-8, Title 26, NJSA to control all air pollutants, not just carcinogens. This and the very broad defintion of air pollution contained in Section 26:2C-2 of the existing laws should be adequate authority. I think it might be worthwhile just to read that defintion for a minute:

"'Air pollution' as used in this act shall mean the presence in the outdoor atmosphere of one or more air contaminants in such quantities and duration as are, or tend to be, injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property throughout the State...", and this certainly would include something like a carcinogen.

Section 5 of S-3035 requires the Commissioner of Health to regulate or prohibit use of products containing carcinogens. And, the present health statutes, again, provide adequate authority under NJSA Section 26:1A-7. And, we have given you a definition there which, again, is obvious - they have the authority under existing law to regulate these materials.

I won't go into details of the other things here. Let's just flip a couple of more pages there and look at the Federal versus State responsibility. We submit that regulations concerning chemicals having to do with protection of both plant workers and the general public should be at the Federal level. Attempts to accomplish this at the State level has in the past resulted in competition for industrial investment, based on leniency of regulation. This is not to the best interest of New Jersey or the public in general. The Federal Government now has adequate legislation to protect both plant workers and the general public. You have the Clean Air Act; you have the Clean Water Act; you have the FDA; you have OSHA; you have the Federal Toxic Substances Act; and you have the EPA, of course - the Federal EPA.

I think number two is also significant in that the Federal Toxic Substances Act, which was supported by the chemical industry, provides the State power to command the forces of the EPA in the event they see a local problem. Now, I won't read that. We have the latest copies of the legislation attached for your review. But, it certainly gives the State the power to require the Federal people to come in and handle a State problem if that should exist.

I think that is all I would like to go into in Appendix A this morning. We would certainly be happy to discuss it in depth at your convenience.

Now, we cannot and should not equate the loss of a job or a plant with the loss of a life. However, we are not talking about guns or butter, economic health or individual health, jobs or cancer. X-rays, for example, probably head the list of known carcinogens, yet society has come to grips with this problem by striking a reasonable and intelligent balance between the risk and the reward and the stringent regulation of the use of X-ray equipment.

Those who would eliminate all significant cancer-causing environmental factors would not, in good conscience, drive a car, smoke, or allow smoking, drink a cocktail, or serve one to friends.

There is a reasonable, sound path to follow which protects people, jobs, and business to the greatest extent. We think that comprehensive, rational studies should be made based on extensive and current data, using the most sophisticated procedures and talented people available. We think the time has come to end scare tactics. We think the "Cancer Alley" label is a "bum rap" and simply is not true. The cancer problem is a national one with many nuances from state to state. The data which has been used to characterize New Jersey as being number one in cancer in the nation is 20 years old, and is limited to white males. As you all probably know, it takes 20 to 25 years for cancer to develop. Thus, the data is based on living conditions, practices, and technology which existed from 1925 to 1945. Current living conditions, practices, and technology are not reflected. Table III shows that New Jersey is no longer the leader. The higher cancer rates appear to be associated more with population density than with anything else. One example of many is the fact that Washington D.C. has one of the highest cancer rates in the country and it certainly could not be considered an industrial location.

Aside from the economy and the jobs involved, what is basic is that we not squander our resources on a plan that does not attack the problem.

We should not do violence to the economy, for a healthy economy is needed to support a program that is needed to attack the problem; a program of getting at the real facts which can lead to targeting solutions, a program of early detection of cancer when chances of cure are so much greater, and a program of education aimed at the total population.

We, therefore, support legislation which would establish an up-to-date registry - to get the facts.

We support legislation which would establish an early detection program; a program which we believe provides the best opportunity to lessen human misery and to save lives.

But, let us not make the mistake of weakening our economy by mandating an over-simplified approach to a pressing public health problem thereby lessening the availability of resources needed to make important gains in our fight against cancer. Thank you.

SENATOR AMMOND: Senator Skevin, do you have a question?

SENATOR SKEVIN: I will yield to the Chairperson.

SENATOR AMMOND: All right. Thank you, sir.

On page 10 of your testimony - the next to the last page - you say X-rays, for example, probably head the list of known carcinogens, yet society has come to grips with this problem by striking a reasonable and intelligent balance between the risk and the reward, etc. Do you have the page?

MR. HANSEN: Page 10? Yes.

SENATOR AMMOND: Today's New York Times says, "Thyroid Cancer Risk Linked to Children's X-rays. The National Cancer Institute says that as many as four million Americans may be threatened with thyroid cancer as a result of X-ray treatment they received as children in the 1940's and 1950's." Now, of course, that was done based on the light of medical knowledge at that particular time and in their higher sense of right they felt they were doing the right thing.

They were not doing the right thing. In light of what we know today, or what we don't know, how can you be so sure that what you produce and the emissions from your plants, in an epidemiological way, do not cause cancer?

MR. HANSEN: Well, Senator, let me first point out that the other side of the coin is not brought out in that article - how many lives were saved as a result of that medical treatment? I think it is not fair to just look at one side of the story and not have to yield a medical expert, obviously, to know what the answer to that question is. But, I would be curious to know how many lives were saved as a result of that kind of treatment.

Now, with respect to how can we be sure that we are not causing any medical problems, no one can be sure about anything in this life. What I can say to you is that the levels of exposure in chemical operations and the levels of exposure of the general populace to chemicals and that sort of thing is much, much, much less today than it was 20, 30, or 40 years ago. We have made great progress in reducing emissions and exposures and it has been well established that exposure is a very important matter when it comes to causing cancer. There is much data, for example, that demonstrates very well that people that don't smoke but one or two cigarettes have much less cancer than people who smoke one or two packs of cigarettes a day and that sort of thing.

So, all we can really do in this area is to pledge to continue to work to try to reduce problems - to find problems - and at the same time I would like to remind the Senator that chemicals are not all bad. They are doing an awful lot of good and I think far, far more good than bad to workers as well as to the general populace. We certainly may have problems we are not aware of and where we find those, we will certainly do something about them.

SENATOR AMMOND: I mean the long-term exposure of any group of chemicals, again, on a society where we don't know for sure. We know for sure that we have the highest rate of cancer. We also know that our particular society is being exposed at a high level on a daily basis.

MR. HANSEN: Well, you are saying that New Jersey has the highest rate of cancer? That is not true, of course, New Jersey does not have the highest rate of cancer.

SENATOR AMMOND: We are known as one of the highest rates in mortality.

MR. HANSEN: We are among the highest but we are not the highest.

SENATOR AMMOND: Well, I don't want to fight for the title.

MR. HANSEN: Sure. But, I think someone like Doctor Demopoulos can answer your question probably better than I. But, I can only, again, point to the same sort of consideration that we talked about with respect to X-rays. How much good is being done? I think there is an awful lot of good being done and I think the amount of problems being caused is really very small, to the best of our knowledge and to the best of our analyses.

SENATOR AMMOND: Look, I don't want you to have the impression that New Jersey doesn't like business. I certainly agree that we have a business problem in New Jersey and that we should make it profitable for industry to operate here, but we also have an obligation to the citizens.

MR. HANSEN: We agree with that. We certainly agree with that, Senator.

SENATOR SKEVIN: Mr. Hansen, your reference to Dr. Demopoulos rings

a bell with me also because your testimony is similar to his, to a large extent, except you are here in a representative capacity - as a representative of the Chemical Industry Council. As I see it, the bottom line, from what you have said - and you said it well, as you usually do -- Again, I take your initial remarks to mean that there is no personal animosity, certainly, between us here.

MR. HANSEN: No, sir.

SENATOR SKEVIN: You are a fine gentleman and a fine representative of your industry. But, the bottom line is, isn't it, sir, that you support the Tumor Registry Bill, like Dr. Demopoulos?

MR. HANSEN: Yes, sir.

SENATOR SKEVIN: And you support the Early Detection Program, like Dr. Demopoulos?

MR. HANSEN: Yes, sir.

SENATOR SKEVIN: And, in terms of S-3035, like Dr. Demopoulos you feel it is not necessary?

MR. HANSEN: It is simply not necessary, Senator.

SENATOR SKEVIN: Okay.

MR. HANSEN: There are adequate controls on the books already at the State and the Federal level. We are not against control. We are not against regulation. I want to make that clear. We think that you do need regulations. You do need controls. They should be consistent, nationwide. We should not have controls in New Jersey that puts New Jersey in a bad light with respect to the rest of the country. I think we should work hard to make sure that we do have adequate controls and adequate regulations not only in New Jersey but nationwide. We believe that those kinds of sound programs are moving ahead and moving ahead rapidly at the national level.

SENATOR SKEVIN: And, like Dr. Demopoulos you feel that the problem isn't as bad as has been described in New Jersey, in terms of the cancer mortality rate and the incidence of cancer? You feel it is bad but not as bad as it has been described?

MR. HANSEN: Senator, let me repeat that to the best of our knowledge industrially-related cancers have been estimated to be in the order of 5% - and this is not just the chemical industry, but industrially - the entire industry. The automobile industry uses a lot of chemicals. A lot of people use a lot of different things. So, the total industrially-related caused cancers - and I am talking about industrially-related, that means cancers, as I understand, it that are caused in conjunction with other exposures, such as smoking and that sort of thing - are less than 5% of the total problem. And, industrially-caused cancers are a few tenths of one percent. And, I simply submit that from a priority standpoint, compared to the total problem, that is not the most important problem. It is important and we are working on it and would like to get the numbers to zero and will ultimately, some day. But, the big problem is with the general public's lifestyle, early detection, good cancer registry facts and that sort of thing.

SENATOR SKEVIN: Right. As between chemicals and people, Mr. Hansen, who do you feel should have the benefit of the doubt?

MR. HANSEN: Senator, we have been through this many times and people always take priority in our thinking, as well as yours.

SENATOR SKEVIN: Fine. No further questions.

SENATOR AMMOND: Thank you, sir.

Dr. Klaus Schreiber, Montefiore Hospital and Medical Center.

D R. K L A U S S C H R E I B E R: I am Dr. Schreiber. I am a pathologist at Montefiore Hospital and I am in charge of the cytology laboratory at this hospital and at the Albert Einstein College of Medicine.

Senators and members of the Committee, I am grateful for the opportunity to be allowed to testify on behalf of Bill No. 3035, introduced by Senators Skevin, McGahn, Maressa, and Martindell.

You also invited Dr. Leopold G. Klauss, who is the Chairman of the Department of Pathology at the Albert Einstein College of Medicine. He extends his apologies to the Committee. Because of a very short notice, he cannot appear in person.

I want to address myself mainly to Section No. 6 on page 2 of this bill, which lists a number of chemical compounds. Pardon me for digressing from my testimony but it had been mentioned before that only a few tenths of a percent, or a very small fraction of people, are afflicted by cancers that are known to be caused by chemical carcinogens. I still think that I will address myself to this very small fraction of people.

On page 2, Section 6, it mentions the following compounds: 4-nitrobiphenyl, beta naphthylamine, 4-aminodiphenyl and an aniline containing compound, which have been causally linked to bladder cancer in man. Even under the ideal circumstances where all of these substances would no longer be produced or imported into this State, a significant number of individuals who have been exposed to these carcinogens in the past will develop bladder cancer in the future because of the long latent period which has been observed in the development of this type of malignant tumor and others. These patients may also develop other malignant tumors, as has been mentioned here this morning.

In a recent statement - May 9th - by Dr. John Finklea, Director of the National Institute for Occupational Safety and Health - NIOSH - before the U.S. Senate Subcommittee on Labor, chaired by New Jersey Senator Harrison Williams, it was pointed out that medical follow-up of workers exposed to toxic substances is considered to be of great importance by NIOSH.

A variety of obstacles are listed in Dr. Finklea's testimony, which limit the possibility to notify workers who are known to have been exposed to carcinogens. However, within certain limits, medical follow-up of these workers is possible.

Although early detection of a malignant bladder tumor or of one of its precursor lesions does not necessarily assure cure of this illness, it has been pointed out already in the early 1960's by Dr. Leopold Koss and his group at Memorial Hospital for Cancer and Allied Diseases in New York that long-term - that means 8 to 10 years - follow-up of workers exposed to para aminodiphenyl could make significant contributions to the survival of those workers who developed bladder cancer. Of particular importance was the fact discovered by Dr. Koss that with the help of microscopic examination of exfoliated cells in the urine of these workers, he became able to predict the future occurrence of clinical cancer - that is, tumor visible with the help of a cystoscope - by as early as five years in advance. In addition, it has been shown in recent years by Dr. Koss in the Montefiore Hospital and Medical Center in the Bronx that small, visible tumors may be associated with widespread malignant transformation of

the bladder epithelium in other parts of that particular patient's bladder. To quote verbatim from one of several of Dr. Koss' publications dealing with cytologic examination of urines of workers exposed to para aminodiphenyl: "Thus it is now clear that a definite sequence of events follows the exposure to carcinogens: 1 Cytologically normal phase with a clinically normal phase. 2. Cytologically abnormal phase, which is clinically still normal. 3. The appearance of clinical cancer."

Considering the low cost of cytological examination of urine specimens and its very high degree of accuracy in the hands of experienced cytopathologists it is understandable that it was the only specific technique for early detection of cancer in carcinogen-exposed workers mentioned in Dr. Finklea's statement before Senator Harrison Williams' Committee.

Research is also being initiated to apply tumor specific enzymatic markers for the detection of bladder cancer cells in urine. This test may prove very sensitive.

In summary, I wish to state that, in view of the particularly high incidence of bladder cancer in males in the State of New Jersey, every effort should be made to use existing methods for the early detection of this type of tumor as well as to support continuous basic research in this field.

I would like to add to my testimony that I agree fully with the Chairperson's statement that prevention is more important than early detection. But, I have to repeat that the latent period of this cancer and others is so long that there are still bladder cancers developing in workers whose last exposure to a carcinogen dates back several decades and the responsibility to this particular group of workers should not be shunned by delaying the passage of the Cancer Control Act.

SENATOR SKEVIN: I have no questions, Doctor.

SENATOR AMMOND: Am I to understand, on page 2, that you recommend, considering the low cost of urine specimens and the high degree of accuracy that this is one good phase of early detection?

DR. SCHREIBER: Yes.

SENATOR AMMOND: Is this being done now on a regular basis, to your knowledge?

DR. SCHREIBER: No, this is not done on a regular basis.

SENATOR AMMOND: Is it something that could be instituted very easily?

DR. SCHREIBER: Yes.

SENATOR AMMOND: By state law?

DR. SCHREIBER: Yes.

SENATOR AMMOND: In all chemical plants?

DR. SCHREIBER: It requires a fairly large number of trained individuals because, in contrast to the pap smear which is being read - let's say some of the pap smears are read at a rate of 60, 80, or 90 cases a day by cytopathologists - this is not possible with extra-gynecological specimens, as we call them. Sputum specimens, urines, spinal fluids, pleural fluids cannot be read at this rate because they are far more difficult to interpret and the American College of Pathologists and the American Society of Clinical Pathologists demands that pathologists trained in that field have to take a look at the specimen - at each one of them - before each particular diagnosis is rendered, whereas in pap smears this is not the case.

SENATOR AMMOND: But, it would have to be done on a monthly basis?

DR. SCHREIBER: No.

SENATOR AMMOND: No? How often would an individual, working and exposed in a plant, have to have it?

DR. SCHREIBER: Three subsequent urines on three subsequent days, or even one 24 hour specimen every three or four months would be sufficient.

SENATOR AMMOND: Every three or four months?

DR. SCHREIBER: Yes.

SENATOR AMMOND: I see. You are then in accordance with this legislation?

DR. SCHREIBER: Yes, I think so, at least with this part of it.

SENATOR AMMOND: Thank you very much, sir.

Mr. Donald Scott, the New Jersey State Chamber of Commerce.

D O N A L D H. S C O T T: Madam Chairlady, Senator Skevin and Mr. Mattock, my name is Donald H. Scott, President of the New Jersey State Chamber of Commerce.

We appreciate this opportunity to present our views on Senate Bill No. 3035, the "Cancer Control Act", a measure which we strongly oppose.

You have many witnesses and I will be brief. Our views concerning the economic impact of the bill on jobs and job-creating investment in New Jersey, are in the February 18, 1977 public hearing record of the Senate Commission on the Incidence of Cancer in New Jersey. I will not repeat that, but for the record of this hearing, we are submitting a copy of our February 18th statement and the related documents, including "A Rational View of Cancer in New Jersey", which was prepared by Dr. Harry B. Demopoulos, whom you have met this morning. This document is written in laymen's terms and we highly recommend it as "must reading" to anyone who is concerned with, or who seeks a better understanding of, the cancer situation in New Jersey.

I will skip over the next several pages. They are there for you to read and put into the record. I think we ought to try to be brief so that you can accommodate your many witnesses. Therefore, I would like to skip to page 8.

To summarize our views on S-3035, we believe that either in its present or proposed amended form, it is totally unnecessary and impractical. It would unquestionably contribute to existing confusion and misunderstanding. It would establish a high potential for conflict of interest and would intrude yet another layer of governmental control into matters of health and safety where existing State and Federal agencies already have jurisdiction. In other words, it would duplicate and I don't want to duplicate all that has been said before, that is why I skipped much of my testimony.

However, we ought to point out that New Jersey has a reputation for excessively stringent environment control laws and regulations and it seems that representatives of both the Legislature and the DEP never tire of advertising this situation. We can assure you that such widely-heralded statements are very carefully studied and that not only are the existing laws and regulations carefully evaluated but also proposed laws and proposed regulations are given equal consideration by those who are responsible for investment decisions in the location, or expansion of job producing production facilities.

The deterrent effect of such proposals, when added to the existing

family of excessively stringent environmental laws and regulations, is severe. Practically every such investment decision is kept "in-house" so to speak and very little publicity given to them. However, on occasion the top of that iceberg of such decisions does appear and the recent Dow Chemical experience in California illustrates what happens.

Regulatory road blocks and delay eventually led to Dow's decision in January to cancel plans for construction of a \$300 million petrochemical complex in California.

After more than two years and costs exceeding \$4 million for an environmentally sound project, the company hadn't even reached point one in the regulatory red tape maze - or, if I might mix a metaphor "hadn't reached first base."

When, at this point, Dow cancelled the project, it had obtained only four of the 65 permits it needed from various Federal, State, local and regional agencies involved in reviewing the proposed project.

We wish to reiterate: We do not minimize the pressing need to better understand and to deal with cancer, but such a control scheme as envisioned in S-3035 would only dissipate our resources instead of marshalling them in a constructive manner to deal with the problem. As Dr. Demopoulos said earlier, you are attacking the wrong culprit.

And, we do have some views on what we believe to be a constructive approach to the cancer problem in this State.

Bearing in mind the already extensive research, investigative and control programs of both public and private organizations throughout the nation, and in many other countries as well, representing expenditures of billions of dollars and the efforts of thousands of people seeking solutions to cancer, we believe New Jersey's appropriate role in this picture should be that of determining just how this State's resources could be best employed to supplement the sophisticated programs of other private and public organizations. This recommended course of action, in our opinion, would minimize duplication of effort, yet maximize the limited resources, comparatively speaking, which are available to New Jersey to address the cancer problem in this State.

It is imperative that we target our resources on plans that directly attack the problem.

Representative of such a direct approach are two of the State Cancer Commission's package of bills, S-1758, which would establish and maintain an up-to-date cancer registry, and S-3034, which would provide for the early detection and treatment of cancer. We support these. It seems truly tragic that we have in this State the knowledge and the capacity to achieve immediate and dramatic inroads against the scourge of cancer, which would mean a reduction of pain and suffering and the preservation of human life. Yet, the principal thrust of inquiry, thus far, seems to have been confined principally to a narrowly-focused concern with industry sources.

I would like to conclude with a quote from Melvin A. Benarde, Professor of Epidemiology at the Hahnemann Medical College and Hospital of Philadelphia, and Vice President of the Princeton Regional Health Commission. This, I believe aptly sums up our view of S-3035 - and I quote: "Rather than 'rush to judgment' with slap-dash legal schemes that are doomed to failure and rather than jerry-rigged pollution control policies, New Jersey really needs what the authors of

the Atlas hoped would be forthcoming -- epidemiologic investigations, both retrospective and prospective -- to establish on a firm basis the relationship between the demographic data and environmental, life style, and genetic variables."

Madam Chairman before I subject myself to questions, I should like to take exception to the opening statement of Senator Skevin, which was given before you arrived. It seems to me - this appeared to me, at least, to be a petulant condemnation of those who differ with the views of Senator Skevin.- in other words, that he has the credible facts but the other side is all propaganda. I am afraid that this demagogic harangue attempted to create an atmosphere not appropriate for a moderator of a hearing, such as this.

One other point - In his questioning of Dr. Demopoulos, following his testimony, Senator Skevin seemed very anxious to associate him with the New Jersey State Chamber of Commerce. We are happy to be associated with Dr. Demopoulos in any way that we can because we think that he is an outstanding expert. But, an attempt to discredit his testimony because our Chamber reproduced a paper that he had written, I think is very unfair.

I think the other suggestion made by his questioning was that there was something wrong with his testimony, that it was perhaps not credible, not only because we happen to agree with it but also because he might be an out-of-stater. It was pointed out that he was from New York. I think that does not disqualify him as an expert. I suggest that your last witness, I assume, is from New York and I suggest that at the Commission hearing that I attended several months ago you had an expert from - I believe it was Chicago, Illinois, or the Illinois area.

I just wanted to point out that, number one, we are happy to be associated in any way we can, reasonably, with Dr. Demopoulos and, secondly, the cost of producing his paper is very minimal. We paid nothing to Dr. Demopoulos and we reproduced it in our own shop. Thank you.

SENATOR AMMOND: I think the Senator has something to say.

SENATOR SKEVIN: Thank you for your fine remarks. I think this is at least the second or third time you have made a fine presentation on behalf of the State Chamber of Commerce. Essentially, the testimony has been the same, I think - that you support our Tumor Registry Bill and our Early Detection Program and that you are opposed to the Cancer Control Act, which essentially is similar to Mr. Hansen's testimony, the chemical industry's and Dr. Demopoulos's testimony, is that correct, sir?

MR. SCOTT: Yes.

SENATOR SKEVIN: Okay. Now, in the case of the last witness, he does reside in New Jersey, in Clifton. Dr. Schreiber is associated with New York Hospital but he does reside in Clifton, New Jersey.

MR. SCOTT: I really take no exception to wherever they come from.

SENATOR SKEVIN: I have the highest regard for Dr. Demopoulos and, as I said publicly before, he was instrumental in the Early Detection Program, in fact it was as a result of his testimony that we developed the bill that we have introduced and that you support. In fact, I have such a high regard for him that we continue our relationship and he has contacted me for additional private sessions on other subjects involved in this particular area.

So, again, I appreciate very much your testimony and your remarks.

MR. SCOTT: I commend you for using Dr. Demopoulos in that capacity.

SENATOR AMMOND: I have something to say. The object of a public hearing is to seek the truth - period. And, sometimes if the person - a Senator or a legislator - has to ask a question that is a little embarrassing, well, so be it. I would not defend someone doing that. Apparently you haven't been to any hearings in Washington.

MR. SCOTT: Yes, I have. I have testified in Washington.

SENATOR AMMOND: Well, I think the Senators here are exceedingly kind to the witness.

MR. SCOTT: My only point is that I wanted to set the record straight.

SENATOR AMMOND: You said on page 9, if you would refer back, of your testimony, in the 4th paragraph: "It seems truly tragic that we have in this State the knowledge and the capacity to achieve immediate and dramatic inroads against the scourge of cancer, which would mean a reduction of pain and suffering...", etc., etc. May I ask you how you feel, in your professional testimony, this could be accomplished?

MR. SCOTT: Do I feel that it can be accomplished? Yes.

SENATOR AMMOND: How?

MR. SCOTT: Oh, how. I am not an expert in cancer, obviously, but we have been told by experts that early detection, for instance, by very simple - rather simple, apparently - and inexpensive cost you can do much detection and, having caught it early, you can cure it in many cases. This is the sort of thing that I think we are talking about.

SENATOR AMMOND: So, once you detect it, you have it. We are talking about prevention. If you were talking about mobilizing our resources in the State of New Jersey in the area of prevention, how would you do it?

MR. SCOTT: I think by education. I don't know. I am not an expert in cancer but what I think we can do in New Jersey is increase our education - get more people to submit to early detection tests and that sort of thing.

SENATOR AMMOND: Thank you, sir.

MR. SCOTT: You are welcome. (see page 36x for Mr. Scott's full statement)

SENATOR AMMOND: Mr. Richard Engler, Labor Union-Philadelphia Area Project on Occupational Health and Safety. Is there a Mr. Richard Engler here? (no response)

All right, Mr. Darryl Caputo from the New Jersey Conservation Foundation. We will then break for lunch at 1 o'clock and return at 2 o'clock.
D A R R Y L C A P U T O: I am Darryl Caputo, Assistant Director of the New Jersey Conservation Foundation.

The Foundation welcomes the opportunity to testify before this Committee on amendments to S-3035. We commend Senator Skevin and his Commission on the Incidence of Cancer in New Jersey for their dedication in searching out solutions to the State's cancer problem. Already, the results of their work are evident. At the Commission's prompting, state agencies have begun to formulate workable programs designed to deal with this problem. However, much remains to be done if the citizens of this State are to be freed from this sword of Damocles suspended above us.

At previous hearings I have noticed that Senator Skevin has always started out with a little story. He hasn't this time, so I would like to

relate a story which I believe is germane to the subject of this hearing. The story takes place in a small community. Within that community was a very high and steep cliff. All of the residents of that community recognized that the cliff was very hazardous and that something had to be done. A town meeting was called to discuss the problem. Those attending the meeting divided into two groups, one group favoring putting a fence around the top of the cliff, the other advocating putting an ambulance in the valley.

Well, the arguments of the latter group prevailed and the ambulance was stationed in the valley. It took only one use of the ambulance to show the people that they had made the wrong decision. Shortly thereafter, a fence was put around the top of the cliff and the ambulance was removed, for the people had learned that it was far wiser to prevent accidents than to attempt to deal with the results.

As we now know, most cancers are caused by environmental factors and, as such, can be prevented. The environmental causes of cancer include, in addition to what we heard this morning, air, land, and water pollution. Preventing carcinogenic substances from entering the environment is a far wiser course of action than ignoring them until we have to deal with the results.

There can be no doubt that there is a lot of discharging of carcinogenic substances into the environment, both in the nation and in New Jersey. We only have to cite a few examples. Recently, the Department of Environmental Protection warned people against consuming fish taken from the Hudson River because of extremely high levels of polychlorinated biphenyls, found in samples of the fish. Recently, the United States Environmental Protection Agency disclosed that they had found high amounts of polybrominated biphenyls adjacent to two plants in Northern New Jersey. The list is endless.

A lot of carcinogenic substances are still in our environment and more are to come. For example, we have been told that 150 million pounds of PCB's presently exist in the soils throughout the United States. Over 100 million pounds of PCB's presently exist in our water. What is even more frightening is that over 800 million pounds of PCB's are currently in use and that this amount will enter into our environment in the future. It must be regulated.

However, let us look for a minute at industry's response to the cancer problem. It has long been known that cigarettes are a cause of lung cancer. The tobacco industry's response to this fact has been the Marlboro Man, clearly a response not favoring the public's health or welfare.

The call for a risk analysis, balancing the risk and benefits, is a classic industrial response to environmental regulation. Industry states that the risk - in this case the risk of contracting cancer - has to be balanced against the benefits to society resulting from the operation of that industry, benefits such as employment and increased spending ability, etc., and we heard a lot of that this morning already. However, the risk analysis implies that some people are going to develop cancer and others may not.

U. S. District Court Judge Miles Lord has aptly identified the questions raised by this process of risk analysis. Some of these questions are: How are we to choose who will take the risks? Will it be the poor, the young, the old, minority representatives, the politically uninfluential? Or, are we to draw straws? How are we to place a value on human life, illness or suffering? Who

Who will determine these values? How are the lives of the unborn to be valued? How are we to decide cases where benefits accrue to some while others - particularly workers - take the risks? These questions have no answers.

In formulating their case against additional regulations, industry marches forth armed with statistics designed to show what enormous sums compliance will cost industry in terms of jobs and lost production. Often these statistics prove persuasive. But, public policy decision-makers, such as the members of this Committee, must consider the many costs to society of refusing to impose the proposed regulations, costs such as impaired health, shortened life spans, lower worker productivity and environmental destruction.

With the above in mind, we offer the following amendments for the Committee's consideration. I won't go through all of them in detail. There are some 12 specific amendments. Let me highlight three or four of them.

The first relates to Section number 6. We understand that this Section has been withdrawn but we wish to state our approval of incorporating into the bill a zero discharge standard for any carcinogenic substance produced or used. It has been scientifically determined that there is no safe level of carcinogen and that the incidence of cancer in a population increases with exposure to a carcinogen. Standards related to carcinogen exposure are based on political compromises, not on medical facts.

If I may skip down to item number three, Section 10 of the bill, I would like to address that. We believe that violations of the act should constitute a criminal offense rather than a civil offense. Deliberate discharges of carcinogenic substances do, after all, threaten the public's health and well-being.

We would like to suggest a couple of additional items which should be added to the legislation - and I am referring to number three, under the subsequent list. A retraining program should be established to assist any employee who loses his or her job as a result of this or similar legislation. Workers who may become unemployed should not be required to shoulder the costs of regulating carcinogenic substances. These costs should be distributed through the society, since it is society as a whole which will benefit as a result of the regulation. Society should bear the cost of retraining displaced workers and placing them into new jobs.

Another one: A state-funded or subsidized research program should be established to develop acceptable non-carcinogenic substitutes to be used in industry.

And, finally, the burden of proof as to the carcinogenicity of a substance to be discharged should fall on the potential discharger. We recommend that the bill include a section requiring dischargers of known substances to have them tested by a competent firm approved by the State. The firm should be bonded to insure accurate testing results. The potential discharger should be indemnified against inaccurate testing results. In addition, dischargers should be required to monitor for carcinogenic substances in both the workplace and the surrounding environment.

Many people here will tell you today that that is already taken care of under the Toxic Substances Control Act. The Act clearly states that. However, the implementation of that Act is another factor which has to be considered. The Act is tremendously under-funded. For example, EPA is only to receive

\$10 million a year for the next three years, that to be increased to \$17 million a year after that period of time. That level of funding is totally inaccurate to carry out the provisions of the Toxic Substances Control Act.

Let me state one more thing: If a legitimate role of government is to protect people from that which they cannot protect themselves, then we offer the following suggestion. It has been stated that alcohol, tobacco, and other dietary factors are largely responsible for increases in cancer. People do have a degree of control over these factors. We cannot forget that the release of carcinogenic substances into the air and water are also related to New Jersey's and the nation's cancer problem. Over these discharges we have no control. It is only appropriate, therefore, that our government properly protect us from that which we, as individuals, have no control over.

Thank you for the opportunity to present this testimony.

SENATOR SKEVIN: I have no questions. Thank you.

SENATOR AMMOND: I have no questions either. Thank you.

We will adjourn now for one hour and we will return at 2:00.

(lunch break)

AFTER LUNCH

SENATOR AMMOND: We will begin the afternoon session now. I am calling the meeting to order. Before we begin with the afternoon witnesses, since there is a long list, if there is anybody here who feels they may not make it, you may bring your written testimony up now. If you feel that you may not get heard or you may want to leave at some point in the afternoon or if anybody wishes just to bring their testimony up because you have to leave, just feel free to do so and give it to Dave Mattock, our legislative staff aide here.

The next witness for this afternoon is Mr. Roy Gottesman from Tenneco Chemicals, Inc.

Again, in the interest of time, if we could keep each witness down to 7 minutes it would be judicious.

ROY T. GOTTESMAN: Senator Ammond, Senator Skevin and ladies and gentlemen, my name is Roy T. Gottesman. I hold a Doctorate in Organic Chemistry from Rutgers, the State University of New Jersey. I have been engaged in research and development in the field of organic chemicals, polymers and plastics for Tenneco Chemicals, Inc. and its predecessor companies for 25 years. Currently, I am director of environment and regulatory affairs for Tenneco Chemicals. My responsibilities include the company's programs in the areas of Occupational Health and Medicine, Industrial Hygiene, Toxicology, compliance with regulatory agency requirements and environmental control.

Tenneco Chemicals is very pleased that your Committee has scheduled this public hearing on Senate Bill S-3035. This bill has been attacked, defended and reviewed in a large number of forums since it was first introduced in the Senate on January 24th of this year. We believe that this formal legislative Committee hearing, where all interested persons have the opportunity to express their views and positions is the best place for consideration of all aspects of this bill. We appreciate this opportunity to appear before you.

Tenneco Chemicals, Inc. is a subsidiary of Tenneco, Inc. We are a

New Jersey based company with principal offices located in Saddle Brook. We consider ourselves responsible citizens, both corporate and private, who have a very substantial stake in New Jersey and a very keen interest in the welfare of the State and its citizens.

We have three administrative, research and engineering centers located in New Jersey and 12 of our 20 domestic manufacturing plants are located here. We have approximately 2,150 employees in our New Jersey operations and almost all of them reside in the State as do the majority of our corporate executives. Through our payroll, local purchases and taxes, we estimate the annual contribution to the State's economy by our employees to be some \$150,000,000 annually.

The incidence of cancer in New Jersey is a matter of concern to everyone in the State. We applauded the formation of the Senate Commission which was charged with investigating and reporting on this subject. The Commission hearings generated much useful information and a number of very sound recommendations. The hearing also revealed how little actual knowledge we have on the causes and the elimination of cancer.

Throughout these hearings, medical professionals testified on the need for more information to provide a base for a long term commitment to fight cancer. Without exception, these experts urged the establishment of a statewide cancer registry and a companion act that would make cancer a reportable disease. We support Senator Skevin's bill to accomplish these objectives and hope that it will be enacted.

The medical experts that testified at these hearings also urged public education on the causes of cancer - to the extent they are known - and they testified on the importance of early detection and treatment. We heard Dr. Demopoulos make such a plea this morning. A number of spokesmen commented that this is the only hope for a significant reduction in cancer mortality over the short term. We support these programs and urge their implementation.

Testimony was also presented concerning the capability to conduct meaningful research programs on the causes, detection, and treatment of cancer in the medical schools and private facilities located in this State, if supporting funds could be made available. It was further stated that if relatively modest state funds could be made available, they would provide leverage for much larger Federal grants, which would provide a ratio of 10 parts of federal funds to one part of state funds. Appeals were made for the State to provide such seed money and we feel this is also a worthwhile and necessary endeavor and should be supported.

However, these commendable and positive programs which merit support were unfortunately relegated to secondary positions in the legislation before us in Senate Bill S-3035, which is primarily a regulatory one. This proposed bill, even with the amendments, is the wrong step in the right direction.

The main feature of Senate Bill S-3035 and the center of controversy concerning it was its calling for a complete ban on certain materials which it listed as carcinogens. As is now history, the proposed ban did not gain support from any group. It was, in fact, described as not being feasible by all of the groups who testified - industry, labor, the medical profession, and environmental groups. In the amendments to the bill which have now been proposed by its sponsors, this ban would be omitted. While we commend these amendments as a step in the right direction, it is our firm conviction that

even amended Bill S-3035 still has a number of undesirable features. In short, we consider it bad legislation.

Aside from Section 6, which proposed the complete ban, which would be eliminated in the amended bill, Senate Bill S-3035 contains three principal elements:

1. The establishment of a Cancer Control Council with some delineation of its responsibilities.

2. Some regulatory authority for the Cancer Control Council, as given in Section 8 of the bill.

3. References to research and education to be carried out by the Departments of Environmental Protection and Health into the causes and control of cancer.

I would like to address each of these points and examine them individually and the need for them. I would first like to discuss the Cancer Control Council.

Three of its proposed seven members are the Commissioners of Environmental Protection, Health, and Labor and Industry, or their designees. The other four members are "citizens" to be appointed by the Governor. The Chairman must be one of these citizen members. So, effectively, control would rest with nongovernmental members. Unfortunately, the bill does not specify the qualifications of the citizen members. We have no assurances that they are in any way competent or qualified for these posts, nor that they would represent a cross-section of interests of various parties in the State. To our knowledge, this would be the only one of many State commissions without broad representation built into the statute creating such a commission. This would also be the only commission that we know of which would have the authority to approve or disapprove rules and regulations proposed by a state executive agency, that is to say, the Departments of Health and Environmental Protection. We cannot see the logic, the rationale, or the desirability of giving such a council veto power over the executive agencies that are charged with the responsibilities of carrying out the intent of the Assembly and the Senate. It amounts to the creation of a fourth branch of government. It is unnecessary and it is undesirable.

To whom would such a council be responsible? What assurances do we have that this council is any more capable than either the Legislature or existing executive agencies to decide upon proper courses of action? On the other hand, we can see some benefit that would result from a committee of representatives from executive agencies such as the Governor's Cabinet Level Committee, which was formed to coordinate programs in the various agencies. We believe that there is merit in considering a committee, council, or a commission similar in structure to the Clean Air Council, or the Clean Water Council that would have authority to hold hearings, investigate, report, and recommend appropriate action to either the legislative or executive branches. We feel that such a committee or council must be carefully structured to insure full representation of all interests. We completely disagree with giving such a body veto power over acts of executive agencies. This is inconsistent with the basic principles of our state government.

I would now like to turn to my second point relating to regulatory authority of Senate Bill S-3035. We believe that the proposed bill is not

necessary since such authority is already provided by other state laws. New Jersey can be very proud that it has strong air and water pollution control laws. As a responsible member of the industrial community in New Jersey, we have a very excellent record of compliance with these regulations and we feel that they are more than adequate to protect the health and safety of the citizens in New Jersey.

Senate Bill S-3035 adds very little to this. In fact, certain sections of the bill appear to have been borrowed almost verbatim from existing laws in which the narrow term "carcinogen" was substituted for the broader term "air pollution." Before enacting additional overlapping laws, we strongly urge that this committee carefully examine existing statutes to determine where or whether additional authority is actually required. We would strongly urge that this committee carefully review existing federal laws. As you are aware, various federal agencies have promulgated and do enforce very strict regulations concerning exposure to hazardous materials in the work place through the Occupational Safety and Health Act and in the environment and community through the Clean Air Act and the Federal Water Pollution Control Act, both of which are administered by the Environmental Protection Agency - the EPA.

Further, in October of last year, the Congress enacted the Toxic Substances Control Act, which is now being implemented and this has broad powers controlling the manufacture, distribution, and the sale of chemicals in the United States. The most widely used materials on the proposed ban list are specifically regulated under TSCA - the Toxic Substances Control Act - and we feel that is more than adequate to control such materials. We do not see the logic nor the necessity for New Jersey to enact more restrictive legislation which would place industry in our State in an unfavorable economic climate relative to that in other states, an environment which others have termed "hostile."

These federal laws invite state participation and enforcement and provide supporting federal funds for this purpose. We were therefore pleased to see that the Environmental Protection Agency has now granted authority to the New Jersey Department of Environmental Protection to enforce national air pollution standards and the control of hazardous emissions from plants and industries throughout the State.

Doesn't it make more sense for the State of New Jersey to participate in Federal-State efforts rather than trying to develop overlapping programs with limited resources? Isn't this a more rational and realistic deployment of state funds? Doesn't it eliminate inefficiency in government? We believe that the regulatory authority which this bill attempts to provide is already provided through State and Federal laws and that we should enforce these regulations rather than create overlapping and unnecessary ones.

Finally, I would like to address myself to the third point, and that is Section 9 of the proposed bill, which gives the Department of Environmental Protection and Health the power to conduct and supervise research programs and programs of cancer control education. We believe that these are highly important to the long-range goals of determining the causes and hopefully eliminating cancer. We believe they deserve more than casual references. Senator Skevin's bill, S-3034, which addresses the early detection and treatment of cancer, including conducting and arranging for continuous basic research, is a step in

this direction. It is, however, only one aspect of a total research program.

These matters are highly important to the long-range goals and we would suggest that they be taken out of Bill S-3035 and be incorporated into carefully developed bills which address these specific subjects in detail and depth.

Tenneco Chemicals thanks you for the opportunity of presenting these comments for your consideration and I thank you for the opportunity of appearing before you today.

SENATOR AMMOND: Mr. Gottesman, on page 7 of your testimony you state: "The most widely used chemicals on the proposed ban list are specifically regulated under the Federal Toxic Substances Control Act." How are they regulated?

MR. GOTTESMAN: Well, the Toxic Substances Control Act is in the rule-making stage at this point and every chemical company will have to report materials that they manufacture, distribute, sell, and so on. The rules are now being promulgated but by November 11th, under the statute, the U. S. Congress will receive from the Environmental Protection Agency a list of all of these materials and the exact method of control will be inspections, it will be the testing of these materials in further tests, and so on. But, it is already enacted. It is a very comprehensive piece of legislation.

SENATOR AMMOND: Okay. Thank you very much, sir.

Mr. Vernon Jenson, Oil, Chemical and Atomic Worker's Union.

(no response)

Mr. Peter Lafen, League for Conservation Legislation.

P E T E R L A F E N: Good afternoon, Senator Ammond. I am Peter M. Lafen, representing the League for Conservation Legislation, New Jersey's environmental lobby.

Today I speak on behalf of every one of LCL's member organizations and individuals in calling for the swift passage of the Cancer Control Act, S-3035. I make that statement because we are not concerned on this occasion with a matter that some might consider esoteric or esthetic environmental luxuries, we are concerned here with a clear, present, and growing threat to human life.

I think it would be redundant and perhaps insulting to reiterate the documented evidence on cancer and New Jersey and I will simply state that we must put an end to the conditions that make living and working in New Jersey carcinogenic activities.

This bill provides the power, direction, and money for the DEP and the State Department of Health to approach this problem in a comprehensive manner, and to continue to change their approach as research brings more information to light.

The objections of industry to further regulation and governmental interference under this bill are predictable, but they pale in comparison to industrial interferences of worker and public health. Regulations under this bill must be strict because, very simply, we need strong protection. While I agree that such regulations should be clear and simple, I challenge anyone to write a simple regulation on Four Dimethylaminoazobenzene - and I have been working on that for a few hours. Paragraph six in the current bill, unamended, is indeed simple, but I don't think that is the kind of regulation that industry desires, or that anyone desires.

As an amendment to the bill, we would recommend consideration of the

imposition of criminal penalties for flagrant violations of the provisions of the act.

The League for Conservation Legislation supports this bill and strongly urges every member of this Committee to work actively for its enactment into law. We thank you for the opportunity to be heard on this topic.

SENATOR AMMOND: Thank you very much.

Mr. Robert Locke, New Jersey Business and Industry Association.

DAVID LLOYD: Madam Chairman, Mr. Mattock, my name is David Lloyd. I am Assistant Vice President of the New Jersey Business and Industry Association. I am appearing on behalf of our Committee for Environmental Quality. Our Association, as you may know, has more than 13,000 company members throughout the State of New Jersey. On behalf of this membership, we appreciate this opportunity to present our views on Senate Bill 3035.

The efforts of this Committee, the Senate Commission on the Incidence of Cancer, and the Department of Environmental Protection to seek positive solutions to the very serious problem of cancer control in New Jersey deserves the wholehearted support of all citizens. This is particularly so since the task is made extremely difficult by the complexity of the problem and the very significant impact that almost any solution is likely to have.

As members of the public, we are as susceptible to threats to our own health as anyone else. As employers, we frankly have a vested interest in the safety and health of the lives of our employees as well. Thus, as representatives of the State's industrial community, we share your concern that the public health be adequately protected.

In addition, however, we must also continue to do all we can to preserve our employees' very means of livelihood. In earlier testimony, we noted the unprecedented loss in New Jersey of approximately one in five factory jobs in just seven years - since August of 1969. Now, while the State's unemployment levels have shown a marked decrease from the high of about 13%, our present level ranks as one of the highest unemployment rates in the country. We submit, therefore, that your concern - and ours - for the economic livelihood of New Jersey citizens mandates that any State action reflect a sensitivity to the overall economic picture.

For your information and review, we respectfully attach a copy of testimony that we submitted regarding S-3035 at the public hearing held on February 18, 1977 by the Senate Commission on the Incidence of Cancer. In addition to those comments, we submit the following: Regarding Sections 4, 5, and 6, according to testimony at earlier public hearings, including the one on February 18th, provisions which would prohibit the production, manufacture and use of alleged carcinogens would have resulted in, at best, only minimal health benefits while creating an adverse economic impact far out of proportion to the anticipated benefits. We would support amendments - which we understand have been proposed - which would delete these provisions for the reasons expressed in our February 18th statement.

Section 7 - Given the broad powers of the proposed Cancer Control Council, proper community representation on that Council becomes critical. To suggest no guidelines for the gubernatorial selection of four public members would be, frankly, to leave the Council vulnerable to charges of lack of expertise, politics, or whatever have you. We respectfully emphasize our

earlier stated recommendation that the public membership be allocated at least as follows: one graduate industrial toxicologist; one Doctor of Medicine, specializing in cancer treatment; one environmentalist from the Sierra Club, League for Conservation Legislation or League of Women Voters and one engineer from the chemical industry to be nominated jointly by the New Jersey Business and Industry Association and the New Jersey State Chamber of Commerce.

Section 11 - Authorizing an agent of either Department of Health or DEP to summarily detain or embargo a product or substance suspected of being produced, manufactured, sold, labelled, released, or used in violation of any rule, regulation, or order vests great power in an undefined official position. We suggest that the term "agent" be specifically defined to include only those representatives of the Department who are qualified enforcement officials.

Furthermore, the "agent" should be required to obtain a court order to detain or embargo a product. Such an enforcement procedure, implemented without undue delay, would have the added benefit of requiring the agent to convince at least one other person - a judge - that there is probable cause that a violation has occurred.

In conclusion, we recognize that the cost of treating illness and disease is on a dangerously upward spiral. Medical, hospital, and insurance costs threaten to place adequate treatment out of the reach of more and more people.

Employee benefit programs, which include medical coverage, reflect this dramatic increase in cost. It is, therefore, in our own best economic interest to support reasonable efforts to reduce these costs to the maximum extent possible.

To maintain a healthy economic climate as well as a healthy physical environment, however, we must preserve a proper balance. By this, we are not suggesting that the loss of lives and jobs be equated. Rather, our concern is that if stringent measures are to be adopted in the hope that loss of life can be reduced, they should be based on strong factual evidence which permits no other course of action.

We thank the Committee for this opportunity to present our views.
(see page 84x for New Jersey Business & Industry Association's February 18, 1977 statement)

SENATOR AMMOND: I have no questions. Thank you very much.

MR. LLOYD: Thank you.

SENATOR AMMOND: Mr. Lou Marinari, Oil, Chemical, and Atomic Worker's Union. (no response)

Dr. Bruce Karrh, DuPont Company.

D R. B R U C E W. K A R R H: Thank you, Senator Ammond. My name is Dr. Bruce Karrh. I am Medical Director of the DuPont Company. I am appearing before you this morning for three purposes:

1. To put the incidence of cancer in general and in New Jersey, in particular, in proper perspective.
2. To recommend priorities for New Jersey to follow in developing an attack on cancer.
3. To voice our opposition to passage of S-3035.

Putting cancer in perspective -- Cancer has been a common topic of discussion in the past several years, but before we can draw rational conclusions on cancer incidence and what we can do about it, we must have a basic under-

standing of several facts.

Cancer is a distant second among the leading causes of death in the United States, accounting for about one-fifth of all deaths. Cardiovascular disease is first and accounts for about 40% of all deaths. Roughly half of all cancer deaths are caused by the three most common forms of the disease: cancer of the lung, the large intestine, and the breast.

Experts have estimated that perhaps as much as 80% to 90% of all cancer is caused by environmental agents, the remainder being attributed to genetic causes and perhaps viruses, as distinct from environmental factors. One must, however, define what is meant by the term "environment." Environmental refers to the total lifestyle of the individual - the aggregate of social and cultural conditions that influence the life of an individual or community. Many have said that environment equates with industrial chemicals in the environment. This is not true and is a gross misrepresentation of the facts. Occupational and chemical exposures are believed to be only a small part of total environmental factors, as I will later develop.

To illustrate the impact of cultural conditions on cancer incidence, consider the example of the Japanese who immigrated to the United States. I mentioned earlier that breast cancer was one of the three most common forms of cancer in the United States. In Japan it is a minor cause of deaths. But, when Japanese immigrate to the United States, their cancer pattern shifts toward the U. S. pattern. By the third generation, Japanese Americans have the same pattern as other Americans. Women with breast cancer show a tendency to have become pregnant later and to have had fewer children than women without breast cancer. Thus, breast cancer is also somehow associated with the environment in the broad sense - that is, with cultural factors.

Cancer of the colon-rectum shows a strong correlation with per capita consumption of meat and a strong negative correlation with per capita consumption of cereals.

The American Cancer Society estimates that cigarette smoking, another environmental factor, may account for 80% of all lung cancer - the leading cause of cancer deaths in the United States today. Therefore, we must recognize that exposure to man-made chemicals is but a very small part of our overall environment and when one speaks of environmental causes of cancer, we are speaking of many more factors than merely man-made chemicals.

In general, cancer death rates on an age-adjusted basis, are either remaining constant or decreasing in the United States. Death rates for some types of cancer, stomach and uterine, for example, have declined. The rates of other types have changed only slightly. Lung cancer rates have risen dramatically - 135% for men and 173% for women in a 20-year period, ending in 1973. As I said earlier, this increase is primarily attributed to the increase in cigarette smoking.

From these facts, I think we can draw two conclusions: 1. There is no cancer epidemic. 2. Most cancer deaths can be prevented if we are willing to change or modify our personal and cultural habits.

The level of decreasing death rates from cancer, with the exception of lung cancer, also dispels the notion that the increased industrialization in the United States has led to an increase in cancer.

But, the question remains, how much cancer can be attributed

to chemicals in the environment or to workplace factors. The available statistics do not provide hard and fast answers. There is no good epidemiological evidence precisely separating occupationally-related cases of cancer from others. This is why we support passage of S-1758, the Cancer Registry Bill, which should provide definitive information on cancer deaths in the State.

Some experts have made estimates of occupationally-related cancer deaths. Dr. John Higginson, the Director of the International Agency of Research on Cancer of the World Health Organization, believes that less than 1% of all cancers have been shown to be related to occupational factors. Dr. John H. Weisburger the Director of Research of the American Health Foundation puts the figures at about 5% of all cancer deaths. Other estimates from other knowledgeable people have ranged up to 10% and 15%. Therefore, I am not saying there are no cancers which are associated with industrial chemicals in the environment, but I am trying to put the facts in perspective as you consider Bill, S-3035.

Let us now turn to the cancer rates for New Jersey. The eight states with the highest cancer mortality rate, as taken from the National Cancer Institute's Study, U. S. Cancer Mortality by County for the Period 1950-1969, are as follows for white males: New Jersey with an annual rate of 205; Rhode Island, 203; New York, 199; Connecticut, 196; Maryland, 192; Massachusetts, 192; Louisiana, 190; and New Hampshire, 189.

Although New Jersey heads the list, the small differences between New Jersey's rates and the other higher states would not seem to indicate, truly, an extraordinary situation. Furthermore, this list does not suggest a high correlation with industrial activity. It is interesting also to compare the New Jersey data with the mortality data from other urbanized areas and their suburbs, as Dr. Demopoulos has previously done. I won't take up your time at this time to go through that again.

Dr. Demopoulos has also stated the possibility that the immigration of persons with developing cancers into the State, where the cancer ultimately developed, may contribute to New Jersey's rate of cancer. Again, I will not take up the Committee's time to redevelop that which Dr. Demopoulos has already discussed.

The rates of cancer and their comparisons with other populations, no matter how small the difference is, does not remove the problem. Cancer and other chronic diseases traceable to the workplace represent human suffering and possible loss of life. Scientific analysis and careful management can control these risks in most cases, which means that the challenge to industry is clear: We must perform adequate research on chemicals used in the manufacturing process to identify those that may cause chronic health problems and control exposure to those chemicals. DuPont believes that these substances can be handled safely, but we are committed to closing down any operation where they cannot be.

I would next like to briefly discuss how DuPont meets these challenges as an example of what the chemical industry does do. A large part of the campaign against the risk of cancer at DuPont involves the Company's Haskell Laboratory for Toxicology and Industrial Medicine. This laboratory was established in 1935, with its main job being to screen compounds and help establish exposure limits so that production processes are safe and products

can be manufactured, transported, used and disposed of safely. Some 600 chemicals a year are screened by the laboratory through evaluation of scientific literature and/or toxicity testing. Many other companies do the same kind of testing in either in-house or outside laboratories.

Another weapon in our arsenal is the use of epidemiology. DuPont has kept a cancer registry of all active employees who developed cancer since 1956 to reveal problems that might not be evident otherwise. Additionally, information on cancer deaths and cancer among pensioners is collected. DuPont's system appears to have been the first of its scope in industry, with several other companies now in the process of developing their own.

We recently tabulated this cancer data among employees during the 19-year period covered by our data for DuPont's eight New Jersey plants. The total shows 520 cases of cancer among the male employees of this group. This compares with 617 cases that would have been expected based on general U. S. population data compiled by the National Cancer Institute and 526 cases that would have been expected at the eight plants based on the average of the DuPont Company as a whole.

The data, however, does not include 282 cases of bladder tumors among active and retired employees from 1919 to the present which were occupationally related and could be traced to exposure to Beta-Naphthylamine or Benzidine at the Chambers Works Plant in Salem County. DuPont stopped manufacturing Beta-Naphthylamine in 1955 and stopped manufacturing Benzidine in 1967. These cases, known to be of occupational origin, were excluded so that they would not mask an excess incidence of cancer from other causes.

One of the shortcomings of developing data such as ours is the non-availability of appropriate comparison populations. For example, comparing DuPont employees to general population statistics is not ideal because working persons in general are expected to have better health than the general population. Comparing individual plant data with the total company experience is a better index of performance. Only one New Jersey plant had a cancer incidence statistically significant when compared to the DuPont Company average. However, analysis of work histories of employees at this plant has shown no pattern that would suggest the incidence rate is related to the work environment.

DuPont believes that the techniques I have briefly described give us the information that is necessary to make safe products, to provide safe workplaces, and to ensure that our products do not pose a risk to the public.

I would like to make a few suggestions for New Jersey's attack on cancer. Cooperation among industry and State and Federal regulatory agencies is essential, as was stated in a letter read earlier this morning from Senator Humphry, in order to provide efficient and effective efforts to protect employee and public health. However, we do not believe there is a present need for legislation, such as S-3035. As the Chemical Industry Council and other industry spokesmen have noted, establishing a new agency overlapping others to regulate carcinogens ignores the existing authority in the Department of Environmental Protection and the Department of Health. Furthermore, by taking advantage of the procedures specified in the Federal Toxic Substances Control Act, the State agencies can cause the EPA to impose controls on a regional basis if data the agencies submit indicates that a significant health risk from cancer exists.

Even though we oppose passage of S-3035, we do support other pieces

of legislation in Senator Skevin's legislative package. We believe that the State Cancer Registry Bill, recently passed by the Senate, will be beneficial to industry by providing valuable comparison data for company or industry and by providing another scientific tool to use in focusing the efforts of the Departments of Health and Environmental Protection.

We support Bill S-3034 which would increase the amount of state-funded research in cancer detection and treatment. Industry is continuing to more thoroughly test chemicals that are being produced and developed. We are confident that the new Federal Toxic Substances Control Act will properly focus the limited national resources in the areas of greatest concern. We believe that sound regulation can be achieved under the Federal Act and the existing statutory authority in New Jersey. We see no need for S-3035 and urge you not to pass this bill.

Thank you very much, Senator Ammond. I will be more than glad to answer any questions that may have developed.

SENATOR AMMOND: Well, I think some of the questions would only be redundant and I think we have said it all today. Thank you very much.

DR. KARRH: Thank you.

SENATOR AMMOND: Mr. Sean Reilly, South Branch Watershed Association.

S E A N M. R E I L L Y: Senator Ammond, thank you. We appreciate the opportunity to speak today before this Committee.

I am Sean Reilly, Executive Director of South Branch Watershed Association. The Watershed Association is a non-profit, scientific/educational organization with concern for environmental quality in New Jersey.

I am a full-time professional environmental problem-solver, with degrees in science and education.

The Association has watched a cancer consciousness climate develop in the State ever since the National Cancer Institute Report was published in 1975 and this Senate Commission was formed in 1976.

Residence in a highly industrialized state with substantially greater than normal cancer death risk certainly detracts from the quality of life in that state. This quality of life issue is certainly clear enough to New Jersians, with the findings that I have referred to.

We would expect that a reasonable response to this problem by representative government would be that the public health must be protected though wise management of the activities of New Jersey's economy which have the potential to threaten human life through ignorance, carelessness, or wanton disregard.

It is an irrefutable fact that the knowledgeable scientific community attributes about 60% to 90% of all human carcinomas to environmental factors. The Senate Resolution which gave birth to the Senate Commission on the Incidence of Cancer took explicit notice of this fact. It seems clear than that our effort and energies must be directed toward controlling, containing and managing man-made carcinogens, such that they do not gain access to the air and water of New Jersey.

Just as an aside, the last gentleman's discussion involved environment and the complex chemistry of the total environment. This morning's testimony on this point attributed - this was Dr. Demopoulos - possibly 50% or 60% of cancer to food ingested by individuals. He also discussed the increased relationship

between smoking and alcohol concerning the increase in cancers. Well, the point is clear that if we go about trying to find a single source for cancer in the State, we are going to miss the boat. Any respected scientist in the field of cancer research discusses synergism, the effect of more than one chemical and its effect on increasing cancer risk. So, if we go about chasing after one isolated group of chemicals, ignoring others, we are bound to be going down the track, as we had before, chasing viruses and coming up empty-handed.

On to the legislation. The proposed legislation, Senate Bill 3035, the Cancer Control Act, is an outgrowth of the Senate Commission on the Incidence of Cancer's investigations into the problem and search for solutions. The South Branch Watershed Association strongly endorses the basic concept of the proposed cancer control legislation - that is, to regulate the manufacture, use and handling of carcinogenic substances. To ban the manufacture, use or handling of these substances would be an unreasonable approach and the proposed bill should be responsibly amended in Sections 4, 5, and 6 to reflect this concern.- as I believe has already been suggested.

We also feel that the proposed Cancer Control Council should not have veto power over decisions made by the Department of Health and the Department of Environmental Protection.

Another vital concern is that the education provisions of the bill should not overlook the education of those who work with carcinogenic materials. Employers should be required to have inservice education programs to educate their work force which is exposed to this high risk environment. Any reasonable employer must see his obligation to protect his employees from higher cancer death rates, which the evidence shows is a certainty unless strict preventative measures are taken in the workplace.

Before I close, I would like to make some additional comments on some testimony heard this morning. Dr. Harry Demopoulos testified this morning on a variety of issues and I would like to make some comment on them. He said: Industry by itself might at most contribute to 5% of all cancer deaths. That is quite a dramatic statement considering the other school of thought in the scientific community. This gets us precisely into the area of endless debate that might go on in the scientific community, looking at statistics. If Dr. Demopoulos says that 60% of all carcinomas are caused by ingested foods and at the most industry has 5%, where does all the rest of the percentage come from? He then gives us a hint. He said in his testimony that a broad look at the NCI data led to the unavoidable conclusion that higher cancer death rates are associated with urbanization. The urbanization is the key, it would seem to us, between the foods ingested, the air that we breathe, the water we drink in the urban areas, which combines for a cinergistic effect of higher cancer death rate.

Dr. Demopoulos further stated that the key ingredients he saw were those associated with foods and personal drinking and smoking habits. It was clear to me, as a listener, that Dr. Demopoulos is from the school of thought that most cancer is caused by foods and not industrialized, urban areas. What a mistake it would be to follow Dr. Demopoulos's theory of regulating food additives and letting industry go for another decade or two like we did in pursuing viruses, only to find out that his school of thought was in error as a sole-source cure-all. Any reasonable scientist without an ax to grind would

recommend that the urban industrial carcinogens, as well as suspected carcinogenic food additives must be controlled, but not one at the expense of the other. I urge Dr. Demopoulos and his colleagues, sharing his school of thought, to draft us some model legislation ideas for controlling carcinogenic food additives. This would be a much greater public health service than stating that industry is a scape goat which ought to be let go.

Today's chemical industry support of the Cancer Registry and the preventative medicine programs, it appears to us, is a self-service, image-building delaying tactic. If industry can continue to delay reasonable control measures for a decade while they watch a cancer registry, they will save a lot of money.

In closing, it has been stated that the new chemical industry handles only a small amount of carcinogenic chemicals. If this is so, then it will be a very small and inexpensive matter for them to regulate a cost effective program with the very great benefit of reduced worker and public health cancer deaths.

Thank you very much for the opportunity to present our views.

SENATOR AMMOND: Thank you very much, Mr. Reilly.

We have Mrs. Elaine Jaskol, who is substituting for Mrs. Leah Greenfield. Would you identify who you represent, if anyone but yourself, please?

E L A I N E J A S K O L: I am Elaine Jaskol. I live in West Orange and I am here today to represent the Essex County Section of the National Council of Jewish Women, a group whose membership numbers 4,000, with 10,000 Council members in the State of New Jersey. I have been empowered to speak on behalf of these 4,000 women in favor of the concept of Bill 3035 for the strict regulation of carcinogens.

For the past year a Council task force has devoted itself to following all available information on the subject of cancer in general and in New Jersey specifically. Having done so, we have grown increasingly alarmed by the spectre of our bodies being surrounded and invaded by substances, some of which have been proven carcinogenic and thousands more of which have effects that are quite unknown. While the causes of cancer in all their complexity have yet to be sifted out by research, experts have made some assertions with confidence. The National Cancer Institute, for example, estimates that 80% of new cancers reported annually are caused by hazardous substances in the environment. The chemical industry, of course, is one of the major industries in New Jersey and we believe that it is implicated in these cancer statistics.

As an organization, the National Council of Jewish Women is deeply concerned with the protection of the environment. Our national resolution on the subject reads as follows:

"The National Council of Jewish Women believes that the survival of humanity depends on the judicious use of the world's resources and technologies. We therefore support effective programs and enforcement of measures for the protection and conservation of the environment."

In accordance with this resolution, the Essex County Section of NCJW supports the basic premises of Bill 3035.

First, we endorse the proposal for extensive research into the causes of cancer and the effects of carcinogens as stipulated in Section 9. To quote National Environmental Protection Chief, Douglas Costle, "We have neglected the subtle but lethal effects of chemicals for decades. Now we must extend the frontiers of scientific knowledge to evaluate what those risks really

are and find ways to control them."

Secondly, as in Section 4, we subscribe to a program that will control the manufacture, handling, and sale of products containing carcinogens and the release of these carcinogens into the environment. We realize that these carcinogens and the industries which have developed around them cannot be extinguished or replaced overnight, though we join with Senator Skevin in wishing they could. However, until such time as they can be replaced - and we favor a time limit - we urge a control program with teeth in it. Such a program should include the following:

1. Industry make known to workers and the public what materials it is using.
2. Work practices be tightly controlled for the safety of employees.
3. Based on current knowledge, standards be set to control exposure within the workplace and release of carcinogens into the air and water and that these standards be rigorously enforced by the Department of Environmental Protection or the Department of Health.
4. All data be accessible to the public while respecting proprietary interests of the manufacturers.
5. Penalties for non-compliance be significant.

We believe this program is realistic. The Philadelphia Inquirer reported in a detailed study in 1976 that in many cases the chemical industry can comply with strict regulation without undue hardship, despite their protests to the contrary. Consider the case of the vinyl chloride industry. Following evidence of liver damage to workers, OSHA set a standard of one part vinyl chloride per million parts air. The plastics industry predicted the loss of 2 million jobs and \$90 billion in production and sales, which is approximately one year's gross sales. The facts are that while complying with the standard, as they claim to be doing, the industry has expanded - there are four new producers of vinyl chloride - and the cost of compliance for the entire industry was only \$300 million, or 1/3 of 1% of their yearly sales.

Like all citizens, we hope for a strong economy in New Jersey, to which the chemical industry contributes significantly. Furthermore, we enjoy a life style made possible by numerous chemicals and related products. But, we feel strongly that these conditions must not be achieved by making the public at large and the employees of the chemical industry in particular the subjects of an uncontrolled experiment in the use of the dangerous and the unknown. America's headlong rush into an age of plastics and chemicals following World War II wrought effects that we are only now beginning to see because of the long latency period of cancer. We fear that the increasing number of current cancer cases is only the tip of the iceberg.

We must act, therefore, not in panic but in haste. The 4,000 members of the Essex County Section of the National Council of Jewish Women urge the Legislature to pass strong legislation that will set up, at once, programs of research for the future and enforced regulation for the present. Good conscience and common sense both demand that no priority is higher than a healthy citizenry living in a healthful environment.

Thank you for the opportunity to speak.

SENATOR AMMOND: Thank you very much. That was excellent.

Mr. R. Weber, B. F. Goodrich Company, Chemical Division.

R O B E R T W E B E R: Senator Ammond, I am Bob Weber. I am the Plant Manager of the B.F. Goodrich Chemical Division Plant at Pedricktown in Salem County. I am pleased to be here today representing the B.F. Goodrich Company and have the opportunity to tell the Committee a little bit about the operation of our plant at Pedricktown and comment on the impact of proposed S.B. 3035. With me today is Dr. Ben Zwicker, Director of Technical Planning. He will discuss in more depth existing health and environmental regulations and compliance strategies.

Our facility at Pedricktown opened in April of 1970. We located in New Jersey because of its proximity to East Coast markets for our materials. We manufacture PVC - polyvinyl chloride - which is processed, or fabricated, by our customers into piping, siding, wire and cable insulation, and molded goods. Also, we manufacture acrylic latex used in coatings for paper and textiles, paints and adhesives. Although we have only one plant in New Jersey, our materials are used by many of the 140 New Jersey PVC users who, in turn, employ over 23,000 people.

At our Pedricktown plant, some 266 employees make up a \$5 million annual payroll. Yearly New Jersey taxes, local and State, total \$243,000. Purchase from New Jersey vendors account for \$4,435,000 per year. Our purchases in New Jersey include valve and piping equipment, chemicals such as plasticizers and stabilizers, heating oil, and drum containers. Transportation costs fare \$4,680,000 and utility costs are \$1,272,000 annually. Thus, our single plant contributes over \$15.6 million into the New Jersey stream of commerce yearly.

Consequently, a ban on vinyl chloride, as originally proposed, each year would remove a significant portion of that \$15.6 million from the State of New Jersey. Yearly, PVC manufacturers contribute some \$103 million to the State's economy. Fabricators, who are the customers, add \$935 million to that total economic impact. And it should be pointed out that there is no substitute for vinyl chloride in producing PVC. A total ban on all the 16 substances cited would be devastating to the New Jersey chemical and other industries with tens of thousands of people suffering job losses in the short run and hundreds of thousands in the long run. Elimination of the ban provision in the bill will not remedy the bill's defects. By New Jersey seeking more stringent State controls, the New Jersey chemical industry will be placed at a further competitive disadvantage with other states.

Although fortunately we understand there is consideration of withdrawing such a ban from the bill, we are concerned with the proposed formation of a Cancer Control Council. We view this as a redundancy in regulation. In the case of vinyl chloride there are already rules for its safe use, enforced by OSHA - the Occupational Safety and Health Administration - and by EPA - the Environmental Protection Agency. We have demonstrated our compliance with these regulations. Formation of a Cancer Control Council would add another layer of management to existing Federal and State agencies - another layer that will add to the delays and paperwork of implementing a basic principle I support, control of cancer. We note also that the qualifications for Council members will not guarantee expertise in all cases. A lay control Council that would be second-guessing the experts on highly technical subjects may not approach the problem in a scientific and logical manner.

We do feel, however, that such a scientific and logical approach to cancer control is achievable through analytical information gathering. Therefore, we support Senator Skevin's S-1758 and S-3034, which provide for a cancer registry and early detection and treatment of cancer.

Although the potential for danger does exist in handling chemicals, occupational hazards are present in virtually every workplace - industrial plant, local service station, grocery store, and especially the home. In our chemical plant special emphasis was taken during the design and operation to contain the chemicals used, thus protecting both the workers and the environment. For instance, computer control technology is utilized for ingredient addition and for automatic alerting systems in case a chemical leak occurs. Specially trained people are assigned to deal with and prevent any safety and environmental problems, on-site. I am proud of the safety precautions and good environmental record of our plant. Chemicals are already regulated by OSHA, covering worker safety and health and EPA covering general environmental considerations, including administration of the Toxic Substances Control Act. For this reason, further control by additional regulations would not seem to serve any purpose.

As I indicated, we use vinyl chloride at our Pedricktown plant. We use it to manufacture polyvinyl chloride, commonly known as PVC, a safe and highly useful material. In this world of chemistry there is no substitute for vinyl chloride in the production of PVC. In fact, in many cases, there are no good substitutes for PVC because of its safety, strength corrosion resistance, and light weight. But, there are precautions that we must, and have, taken to use vinyl chloride safely.

Dr. Ben Zwicker of our Company will discuss our control methods in safely handling vinyl chloride.

D R. B E N Z W I C K E R: Senator Ammond, I am Ben Zwicker, Director of Technical Planning and I am responsible in our headquarter office in Cleveland for interlacing our research and development programs with the requirements, such as those brought about by the latest toxicological studies indicating the need for improved control. We did this in the case of vinyl chloride and I have with me a basic story of our experience in case you are interested in adding this to your papers for the record.

I have been an active participant on our Division's Task Force for Compliance with the Toxic Substances Control Act. And, as Bob Webber indicated, both the Occupational Safety and Health Administration and the Environmental Protection Agency addressed themselves in detail to the vinyl chloride issue and they did decide to control its use, rather than eliminate it. This occurred in 1974 after our Company and the industry alerted government authorities as to the potential connection between worker exposure and high level vinyl chloride and angiosarcoma, a very rare disease of the liver, which, incidentally, aided in its identification as a clear occupational-health related problem. Numerous public hearings, widely publicized allowed all interested parties and many experts in the field to present their case. Rules for control were then promulgated. Let me highlight these regulations briefly.

At this point, I would like to refer to the previous speaker and correct the record. The one part per million was not the reason the plastics industry, fundamentally, objected. The original regulation was, "No detectable", which is zero. That was unattainable and would have shut the industry down.

After due consideration, OSHA limited the standards of personal exposure to vinyl chloride to 1 part per million for an 8 hour time period and sets a ceiling of 5 parts per million for a 15 minute exposure. In layman's terms, 1 part per million is equivalent of 1 minute in 2 years, or 1 inch in 16 miles. The OSHA standard also calls for employee training, medical surveillance, record-keeping for 30 years, and continuous automatic monitoring systems. We are abiding by the OSHA regulation not only in Pedricktown but in all of our PVC handling and manufacturing facilities.

EPA promulgated a standard on October 21, 1976, for emissions of vinyl chloride from new and existing factories that manufacture not only vinyl chloride, ethylene dichloride, but also poly vinylchloride. Note that PVC fabricators, or processors, were not included since an EPA study indicated that vinyl chloride emissions from PVC were not sufficient to warrant further EPA control after the manufacture of the product. The EPA standard calls for best available control technology to be used for process emission sources and fugitive - or undefinable - emissions. The standard also includes EPA approved leak detection and elimination programs and the reporting of emergency releases, as well as long-term record keeping. We are moving to comply with that standard and we will do so well within the legal and time requirements. I might add, this will require the expenditure of very considerable amounts of capital.

The technical effort in industrial control of vinyl chloride has been extensive. Methods of measurement sensitive to fractions of a part-per-million were devised - many of them in our own laboratories. Sophisticated monitoring devices and automatic alerting systems were developed, tested and installed. Research and development effort in our operations changed production techniques and reduced human exposure. In addition, the vinyl chloride industry was and continues to be a major sponsor of research into health effects of vinyl chloride. This belies any assertion that industry does not care about its workers' health.

And what is the safety record around a plant? It should be pointed out first that the cases of angiosarcoma that have been identified and that are now associated with PVC workers numbering close to 60 worldwide over a period of 20 years, were in areas of high exposure to vinyl chloride for a significant period of years, not in surrounding communities. It should be noted that none of the deaths from angiosarcoma in these workers exposed to VCM have been in the State of New Jersey and some of them do have PVC plants that have operated here for nearly 30 years. In fact, EPA determined that in promulgating its new regulations, it would reduce possible additional angiosarcoma cancer to far less than 1 chance in 5 million per year for those people living within 5 miles of a VCM/PVC facility. In addition, the recently enacted Toxic Substances Control Act will be addressing the same topic, namely control of toxic substances of other types. In TOSCA, cancer-causing chemical substances will receive the highest priority. After initial tests of chemical substances are compiled, new chemical substances will require pre-manufacturing notification. Through this process, the adequacy of data on potential toxicity of chemical substances will be evaluated by EPA. It should be noted that TOSCA incorporates provisions that preempt State legislation on the same topic. To duplicate this effort with uncertain results, would be a disservice to the taxpayers of New Jersey, in my

opinion.

In summary, we support the basic concept of cancer control as discussed above. In addition, we support Senator Skevin's and your other Committee's bills, 1758 and 3034, which provide for the cancer registry and an early detection clinic program and State funded research in the detection and treatment of cancer. However, we do object to the concepts of Bill 3035 because:

1. The proposed ban of the 16 chemicals, including vinyl chloride, and, subsequently, anything that may be added, is unnecessary. EPA and OSHA have already established control regulations for vinyl chloride. We are complying with these rules. Vinyl chloride use and handling is already being safely controlled.

2. The Cancer Control Council -- We do not see the need for this additional, redundant organization because it may well add delays and confusion to cancer control by adding an extra layer of management to existing agencies.

I thank you.

SENATOR AMMOND: I think most of the questions have been asked of the chemical industry today. Thank you very much.

Mrs. Jo Ann Katzban, Hoboken Environmental Committee.

J O A N N K A T Z B A N: My name is Ms. Jo Ann Katzban. I represent the Hoboken Environment Committee. The Environment Committee represents hundreds of residents of Hoboken who are very much concerned with their environment and the effects it has on their daily lives. The bill we are discussing today, the Cancer Control Act, is of direct and intense interest to us. According to the National Cancer Institute Study, Hudson County has the highest death rate for cancer in New Jersey - the State with the highest cancer death rate in the country. Hoboken then is part of the "hot spot" in cancer alley. This "hot spot" has a density of over 45,000 people per square mile.

A short run down of the NCI study shows that Hudson County has the highest death rate in New Jersey for cancers of the trachea, bronchus and lungs, esophagus and larynx. It has the second highest rates for cancer of the rectum and large intestine. We would like very much to relinquish these titles.

We believe, therefore, that the continued uncontrolled release of known and probable carcinogens into the air, water, and land constitutes callous disregard for the health and welfare of the people of this State. Therefore, we support the rigorous regulation of known and suspected carcinogens and, where possible, the timely substitution of non-carcinogenic for carcinogenic chemicals.

Claims that non-carcinogenic substitutes are unavailable or impractical must be satisfactorily documented by industry, which should also be required to submit evidence that such substitutes will continue to be sought. If the use of carcinogenic chemicals is temporarily permitted, extensive monitoring and stringent controls must be required. All data must be made available to employees, State authorities and the general public.

As to the make-up of the Cancer Control Council, we feel quite strongly that representation of certain groups should be specified in the bill. These include labor, consumer, environmental and health or medical organizations.

Since, contrary to the impression that Dr. Karrh tried to make, incidents of most cancers is still increasing and dramatic breakthroughs in treatment and cures are few and far between, prevention is the best tool we

have in controlling this disease. Although much study still remains to determine exact cause and effect relationships; human threshold levels; if any, and the synergistic effects of various chemicals, the cost of delaying controls is too great to risk to take.

In 1975, \$1.8 billion was spent nationally, solely for the hospital care of cancer patients. New Jersey's share of that would be well over \$36 million annually, and these figures do not include doctor bills, outpatient treatment, home care or funeral costs. Neither can we begin to calculate the loss of family income associated with loss of work by cancer patients, nor, again, the great emotional burden borne by these victims and their families.

Clearly, the costs assumed by these individuals and by society in general far outstrips the costs of controlling the use of carcinogenic substances. That known carcinogens are not subject to outright ban is compromise enough. The Hoboken Environment Committee urges you to develop a strong and well-funded program to help move New Jersey out of first place in this macabre race.

In closing, I would like very much to commend the work of this Committee and in particular to express our thanks to Senator Skevin who has truly shown that his first concern is for the health and welfare of the people of this State. Thank you.

SENATOR AMMOND: Before you leave, would you care to venture any opinion as to why you feel Hudson County is the highest in the State?

MS. KATZBAN: Well, basically my feelings are that I think the correlation between the high air pollution levels and heavy industrialization in the area definitely should at least be extensively explored and studied and also automobile traffic from both of the tunnels. I think we have all of the prime environmental indicators existing in Hudson County.

SENATOR AMMOND: All right. Thank you very much.

Dr. John Tobin, American Cyanamid Company.

D R. J O H N S. T O B I N: Madam Chairperson and members of the Committee, I am Dr. Hohn S. Tobin, Assistant Corporate Medical Director of American Cyanamid Company which is headquartered in Wayne, New Jersey. I am a physician licensed in New Jersey and four other states. I am certified in Occupational Medicine by the American Board of Preventive Medicine and have 22 years experience in occupational medicine.

Before I continue with my prepared remarks, I would like to correct an answer that was given to a question posed by you this morning. Dr. Klaus Schreiber of New York is perhaps not familiar with medical surveillance methods in New Jersey industry. He replied in answer to your question that exfoliative cytology was not done in New Jersey for bladder carcinogens. My company manufactures a bladder carcinogen in one of our plants and for many years we have been doing urine exfoliative cytology on all employees that are exposed to this substance. And, I am sure that other manufacturers have been doing the same.

SENATOR AMMOND: Thank you for that.

DR. TOBIN: I am pleased to have the opportunity to appear before you today to express briefly the views of Cyanamid and my own personal convictions in regard to S-3035, the Cancer Control Act, introduced by Senator Skevin and co-sponsors. I ask your consent that my remarks be included in the permanent record of these hearings.

Cyanamid is a major producer of agricultural, consumer, medical and specialty chemical products with 1976 sales of more than \$2 billion. In addition to our having our corporate headquarters located in this State, we also have eight production plants, research laboratories and distribution facilities in New Jersey with a total employment in the State of about 6,700. We have major installations at Bound Brook, where we employ 2,500; at Linden, with 800; at Princeton where 650 people are employed by our Agricultural Division; and at Clifton where 850 people are engaged in plant foods and consumer products operations.

Cyanamid has been a significant economic factor in this State since 1916. We are ranked currently as the 21st largest employer in New Jersey.

It is our belief that enactment of S-3035 would have a serious adverse effect, not only on our business and employees in New Jersey, but on the economic health and citizenry of this State. Further, we do not believe S-3035 would provide the benefits and protections from the risk of contracting cancer which are claimed by its sponsors because it does not affect any of the major causes of cancer.

Cyanamid is deeply concerned with the tragedy of cancer, both from the viewpoint of a major producer of chemicals and from the perspective of an organization involved for many years in medical research and production of chemotherapeutic agents to combat cancer through our Lederle Laboratories Division.

Cyanamid has a long-standing commitment to alleviating the human suffering and economic deprivation caused by illness and injury from work-related exposures. We are working through many channels to 1) protect employees, customers and others from identified threats to health caused by products or industrial processes, 2) cooperate fully with scientific efforts on the Federal and State levels to identify the true relationships between industrial chemicals and cancer, and 3) to find and make available better, cheaper and more effective anti-cancer drugs.

Multiple efforts are now underway by the Federal Government and by many State and private agencies as well, to establish actual cause-effect relationships between industrial chemicals and cancer in man. Several chemical carcinogens have already been identified, but even these are permitted by Federal authorities to be used under stringent controls. No total Federal ban has been imposed, even on the most toxic or dangerous compounds, in the belief they can continue to be handled safely under proper controls and for a specific purpose.

Many Federal agencies including the National Cancer Institute, NIOSH, OSHA, FDA, and others are now operating vast programs in terms of funds, personnel and scientific expertise to determine the degree of hazard posed by specific compounds and their use by man. Strong legislative authority, aided most recently by passage of the Toxic Substances Control Act of 1976, empowers the Federal Government to regulate chemicals, including carcinogens. As noted earlier, rules and regulations to implement this Act are now being formulated.

For the State of New Jersey to enter this complex area by unwarranted legislation in total disregard of these on-going Federal efforts and of the programs of its own executive branch, would be a serious error. S-3035 assumes that all chemicals are guilty until proven innocent and that those 16 most

suspect should be totally banned without evidence that such a ban is, in fact, necessary or even desirable.

Cyanamid is convinced that scientifically valid studies, such as those now underway by the National Cancer Institute, NIOSH, the U.S. EPA and the various New Jersey State agencies are essential to determine the true relationship between industrial chemicals and cancer in man. We believe that evidence should be gathered on all of the 1500 compounds identified by NIOSH as suspected carcinogens; and that particular attention should be given to those which are of the greatest concern because of their prevalence or persistence, their toxicity, or other factors which should make them priority targets for investigation.

Furthermore, Cyanamid believes that parallel efforts must be undertaken for the many suspected carcinogens which are not industrial chemicals, that is, formed by reactions in the environment, and those produced by human activity such as various hydrocarbons produced by vehicles. Even more important, since most experts believe that 90%, or more, of environmentally-caused cancer is a result of cigarette smoking, diet and other life-style factors, these cannot be ignored in cancer prevention programs.

Indeed, to undertake the ban or control of industrial chemicals in New Jersey without a real comprehension of living habits, work experience, migration, age, family history, and the effects of pollutants originating outside the State on cancer incidence - not to mention proved effect of the chemicals themselves on man - would be attacking the smallest part of the problem, attacking it piecemeal, and attacking it without a clear idea of benefit to be gained or cost to be paid by the people of New Jersey.

Proponents of S-3035 have made much of the estimates that the vast majority of cancer is caused by environmental factors. They conveniently omit the definition of "environment" used by the researchers who publish that statement, namely anything that is not genetic in origin.

Medical experts have testified before the New Jersey Cancer Commission that all industry related cancers, that is, including all industrial activity and not limited to the chemical industry, may account for no more than 6% and possibly as low as 1% of the total number of environmental cancers in New Jersey.

New Jersey has 10% of the U.S. chemical industry, the highest concentration in the country, but ranks 12th in total cancer deaths behind several non-industrial states - hardly a justification for the "cancer alley" title.

The economic cost would be enormous to New Jersey should S-3035 be passed. As written, the bill would bring industrial activity and commerce in the State to a standstill, since many of the chemicals listed have been used for decades in construction, fabrication, and processing, and are an integral part of our plants, equipment, and vehicles.

Cyanamid would be hurt less severely than many in the industry in that we manufacture none of the 16 named chemicals and process directly only one of them - ethyleneimine, some 50 pounds of which is used in our Bound Brook plant for manufacturing the anti-cancer product THIOTEPA, which is prescribed for some 3,000 active cancer patients annually. There is no known alternative chemical process to produce this medically-effective anti-cancer agent. We, therefore, find it ironic and disconcerting that the State of New Jersey

unwittingly could consider depriving cancer patients of needed therapy under the guise of cancer protection.

Trace impurities of the 16 chemicals named in the bill can occur at extremely low levels deemed not harmful to health in many commercial compounds. For example, all vinyl plastic hose and automobile parts contain trace amounts of vinyl chloride. Jet aviation lubricants contain trace amounts of beta naphthylamine. Literal enforcement of S-3035 would ban all automobiles and jet aircraft from New Jersey.

S-3035 defines carcinogen as "a substance or agent inciting cancer and shall include every substance or agent identified as a probable or proven human carcinogen by NIOSH." While S-3035 specifies a complete ban of 16 such compounds, it also would set precedent for totally banning other chemicals which may be in any way suspect in the future, including NIOSH's list of 1,500 suspected carcinogens or conceivably its list of 16,000 toxic substances. Such extensions, under the guilty-until-proved-innocent philosophy would have immediate and catastrophic effects on industry, commerce and employment in New Jersey.

The National Cancer Institute has found that defining a carcinogen is not a simple matter. The National Cancer Advisory Board Subcommittee on Environmental Carcinogenesis stated in its report of June 2, 1976, "The Subcommittee recognizes that at present there is no simple and universal definition of either carcinogenesis or neoplasia."

The bill makes no provision for the use of carcinogens in research or for other specialized uses, thus it would adversely affect Cyanamid research and development on chemicals and pharmaceuticals in New Jersey and would force relocation of these functions to other areas. Further, the very analytical tests used to detect the named carcinogens usually require a standard sample of the compound for comparative testing. Even such procedures would be outlawed by S-3035.

The bill also would outlaw the creation of a named carcinogen at any point in the chemical process, even within closed systems and even if the compound was subsequently transformed into another less hazardous or innocuous substance before sale or use.

Cyanamid also believes that the establishment of a New Jersey Cancer Control Council, as provided by S-3035, is unnecessary and a diminution of the authority granted to the Departments of Public Health, and Environmental Protection. The Council would serve no useful purpose, either in initiating policy or programs, or in exercising lawful oversight, but it would interject a layer of bureaucracy between the Executive and Legislature. There is no provision to insure that people knowledgeable in the area they are to oversee would be appointed to the Council.

Expertise and authority exist in the Department of Public Health and the DEP. They and other State agencies are already linked through the Governor's Cabinet Cancer Committee in coordinating programs, and they are now moving ahead with major programs with respect to environmentally-caused and chemically-related cancer. S-3035 would further aggravate the jurisdictional problems which now exist between the Commissioner of Environmental Protection and the Commissioner of Health, both of whom have authority over human health in New Jersey, and also complicate the State-Federal relationship since the Federal Government is issuing

rules and regulations on the same issues and compounds.

Cyanamid believes actions with respect to specific chemicals should not be taken by the Legislature but should be regulated by the proper Federal and State agencies which already have the authority, expertise and procedures to deal with them.

Therefore, Cyanamid urges that S-3035 be rejected. Thank you, Madam Chairperson.

SENATOR AMMOND: Thank you. I think we have had sufficient testimony on this subject.

Mrs. Gail Neldon. Would you state who you are representing, if not yourself?

G A I L N E L D O N: My name is Gail Neldon. Although I represent no organized group, I appreciate being allowed to testify for myself, as a private citizen, as wife, mother, and resident of New Jersey. I am a resident of Livingston, New Jersey. For very personal reasons I am here today to support the basic intention of Bill S-3035 and to urge its passage, in amended form, in all due haste. It is already too late for the 14,000 New Jerseyans known to have died last year from cancer and for the 24,000 New Jerseyans who are new cancer cases this year. Hopefully, it will not be too late for the thousands of people expected to develop cancer next year in New Jersey.

Since twenty-seven years ago, when, as a child, I lost my father to cancer, I have been increasingly aware of the insidiousness of that killer. During the past year, however, I have been actively involved in studying closely the latest information on the problem of cancer. As a result, I have become more and more alarmed for my young family and for the other residents of my State as I follow the disclosure of mounting evidence which points to New Jersey's proportionately high incidence of cancer-caused deaths. That, for example, New Jersey, among all the states, has been found to rank first in cancer-caused deaths of white males and second in deaths of white females is most sobering news.

A resident of New Jersey all my life, I left several years ago for Northern Arizona to join my husband, an Arizonan, who was completing his studies there after military service. When he received his degree in business management, we decided, with great regret because of the healthful and beautiful Arizona environment, to return to New Jersey which offered more numerous employment opportunities due to its high degree of industrialization.

Now, we are dismayed and outraged by the knowledge that our family is being exposed here in New Jersey to a higher degree of carcinogenic contamination than anywhere else we might have chosen to live. We wonder how we, and other New Jersey residents, can remain here in good conscience.

We are remaining, for the time being, because of two hopes. One comes, ironically, from an awareness of the thesis which has been proposed, that 80% to 90% of cancer is caused by environmental agents. We reason that if the New Jersey environment can be monitored effectively and if industrial use and emission of known or probable carcinogens into the air, water, and workplace can be regulated reasonably, then a high percentage of cancer in New Jersey may be abated.

A second hope which keeps us in New Jersey is that this Senate, which encouraged us by passing unanimously and quickly Senate Bill 1758, providing

for a cancer registry, will lead the way for our Legislature in instituting similarly prompt and thoughtful action on a cancer control act. Such action would begin the remedial program needed to return our State to good health, as well as to restore its good name which has been besmudged by the title "cancer alley."

Having returned to New Jersey because of its industry, I would not wish to see this industry unrealistically or unjustly damaged by an outright ban on certain known or probable carcinogenic chemicals which form the base of much of the State's industrial production. I do feel, however, that industry, if it is to serve humanity and not just its own interests, must be urged by legislative action to find safe and suitable substitutes for known carcinogens and I would like to see this Senate begin the process of impelling industry to develop new techniques for controlling emissions, as well as for changing industrial processes to reduce exposure to cancer agents in the cases where substitutes cannot legitimately be found, or while the search for them is in progress. To these ends, I humbly but strongly recommend that the Department of Environmental Protection and the Department of Health with advice from a Cancer Control Council, as proposed in Bill S-3035, be empowered by the Legislature to formulate and enforce rules and regulations monitoring and controlling the release of carcinogens into the environment and the workplace. Thank you for allowing me to testify.

SENATOR AMMOND: You know, I noticed - before you get up - that you are the fourth person who said, "tests on white males." Did you say that?

MRS. NELDON: Yes.

SENATOR AMMOND: Are there no tests on the black population? Is it not true that they suffer a higher incidence of all diseases in the ghetto?

MRS. NELDON: I understand that there are not reliable statistics available on that.

SENATOR AMMOND: Oh, I see. Okay. Thank you very much for taking the time to come.

Mr. M. J. Sloan, Shell Chemical Company.

M. J. S L O A N: I will try not to be redundant. Senator Ammond, my name is M. J. Sloan. I am Manager of Regulatory Affairs - Health, Safety, and Environmental Support in Shell Oil Company's Washington, D. C. office. Accompanying me is Ernest Scuitto, Sales Manager for Shell Chemical Company with offices in West Orange, New Jersey.

I appreciate the opportunity to comment on Senate Bill 3035, the Cancer Control Act. I lived in Allendale, New Jersey, myself, for nine years and therefore I do have a great interest - that is, before I got transferred - and special concern for New Jersey.

Shell Chemical Company has long enjoyed a very productive history in New Jersey. We presently operate plants at Princeton and Woodbury and a distribution facility at Sewaren and chemical sales offices in Princeton and West Orange. Our parent company, Shell Oil Company, employs a total of approximately 860 people in the State, including the chemical employees.

Cancer is a dread disease and we can't find a cure for it soon enough. The trauma and expense caused by this disease to both the patients and the loved ones is staggering. You in New Jersey are understandably concerned because this State's incidence of cancer does exceed the national average.

Unfortunately, our knowledge of what causes cancer and what are the body's defense mechanisms against cancer are in the preliminary levels of understanding. Much more research is needed before we can understand and conquer this disease.

Now, in a portion of my statement I referred to the environmental sources and a breakdown and all that but I don't think I will go through that. What I would like to do, though, is enter into the record - if you so want - an article by R. Lee Clark and Frank Rauscher of the American Cancer Society from which many of the statistics given this morning were taken, really - if you would like to have it. (see page 92x for aforementioned article)

Even though the 1% to 2%, or 1% to 5% level of occupational exposure causing cancer is a small amount, Shell Chemical Company and the other members of the chemical industry - many of whom have been represented here today - are concerned with the elimination of even this small percentage of cancer caused from workplace sources.

The chemical industry routinely produces products that serve all industries and in so doing, continually work with dangerous chemicals in a safe manner. Improved technology continues to increase the margin of safety of such operation both for the worker and the environment.

The challenge presented to this Committee, then, should not be to direct its action exclusively against industrial chemicals as implied in some sections of the original drafts of Senate Bill 3035, but rather toward the broad efforts that would help understand and control all causes of cancer. Like all challenges, proper tools are needed and a careful and studied strategy undertaken if that goal is to be achieved. In the case of cancer, facts and improved technology are the tools. The battle plan should be based on a careful and studied analysis of these facts. We ask then that laws and regulations, when they are written, be based on the best scientific evidence available and that they be shown to be necessary and that the economic and social costs of the laws and regulations be considered along with the benefits.

We believe this Committee and Senator Skevin's Commission on Environmental Cancer is attempting to do just that and you are to be commended for your efforts. Wisely, you have recognized the urgent need for the information in recommending early detection and the Cancer Registry.

A troubling question is this: Is Senate Bill 3035 necessary? Doesn't the New Jersey Departments of Health and Environmental Protection already have the authority to control known carcinogens? Furthermore, as stated by others, it should be noted that several Federal agencies have been created to deal with this problem - the EPA, which has been mentioned, and the Occupational, Safety, and Health Administration. These agencies administer a number of environmental laws including the Occupational Safety and Health Act and TOSCA. All of these agencies have been established as a means of insuring that the worker and the public are adequately protected.

It appears to us that Senate Bill 3035 is duplicative and wasteful. It also appears that Senate Bill 3035 complicates the regulatory process in that it would divide administrative control between the Departments of Health and Environmental Protection, while authorizing veto power for a Cancer Control Council. Such complicated procedural requirements may turn out to be a logistical nightmare for both industry and the regulators.

We believe that it is unnecessary to create the Cancer Control Council. If it is created, it should be an advisory Council. The existing Clean Air and Clean Water Councils are currently providing citizen input into this area of regulation.

Our interest is in continuing and improving our ability to provide for the future - to make a better life for people, not to endanger it. We feel, as you do, that making the work place safe for employees, while providing products that are also safe for customer use, is a matter of social responsibility for any company.

Industry and good health practice can coexist if the work environment is properly monitored and maintained. There are safe levels of chemicals and other agents to which people can be exposed. There is some argument on that, I know. We believe the present authorities in New Jersey can adequately control the release and use of chemicals in New Jersey. Therefore, we urge that the New Jersey State Legislature to reject S-3035 and adopt S-1758 and S-3034. Thank you.

SENATOR AMMOND: On page 3 of your testimony, when you talk about Dr. R. L. Clark, President of the American Cancer Society, he attributes only 1% or 2% of cancer that occurs because of intense exposure. It is only 1% or 2%.

MR. SLOAN: Yes, that is right in that article.

SENATOR AMMOND: We are not only talking about that, I think we are talking also about the industrial emissions which affect a greater portion of society.

MR. SLOAN: I think he gives a figure there--

SENATOR AMMOND: So, that would have a much higher rate than 1% or 2%.

MR. SLOAN: Yes. I think that is covered also in his article.

SENATOR AMMOND: And there is a criticism of the American Cancer Society: That they tend to pay attention to talking about cancer after you get it rather than preventative. This article was an answer to criticism of the American Cancer Society.

MR. SLOAN: Yes, I know it was. I know that. But, that is where many of those statistics came from that were quoted this morning.

SENATOR AMMOND: Okay. Thank you very much, sir.

Joyce Schmidt, League of Women Voters. (no response)

Mrs. Lillian Cablot. (no response)

Kenneth Pyle, Society for Environmental Economic Development.

(Response from member of audience)

Are you sitting in for him?

MEMBER OF AUDIENCE: Yes, may I?

SENATOR AMMOND: Sure.

LOU APPLEGATE: I am not Kenneth Pyle and I am not President of the Society for Environmental and Economic Development, but I am Lou Applegate. I am Secretary of the Society for Environmental and Economic Development. SEED, which is the acronym for the Society for Environmental and Economic Development is a labor-industry coalition working to achieve a balance between our environmental needs and our economic needs. Our goal is to improve New Jersey's environment and, at the same time, maintain and improve job opportunities.

We commend Senator Skevin and other members of the Legislature for

proposing and processing the Cancer Registry Bill - S-1758 - and Early Detection Bill - S-3034. We have been urging legislative approval of these bills. We also support similar objective efforts to determine who has cancer and why. Certainly, no one can disagree with these efforts to reduce the incidence of cancer in New Jersey. However, we have several concerns with S-3035 and efforts to achieve its enactment into law.

One of these concerns the stamping of New Jersey as the cancer state. Medical testimony submitted by Dr. Demopoulos and others indicate that a number of states and other areas of the country have a higher incidence of cancer than does New Jersey.

A second concern is the creation of another governmental control agency with full power to staff, expand, hold hearings, process permits, issue directives and generate additional legislation to gain more and more power. This is particularly objectionable in view of existing State and Federal laws that authorize adequate controls. We know there is some serious concern in our legislature about the ever-increasing bureaucracy created by the State Legislature and amply fed by the administrative branch of State Government. This legislative concern is evidenced by their creation of investigative committees, such as Senator Ammond's - your own, Madam Chairman, or Chairperson I think I should say - Commission on Waste, Duplication, Inefficiency, and Mismanagement in State Governmental Operations, as well as Assemblyman Herman's Oversight Commission.

A third concern is that of singling out New Jersey's industrial community for "special treatment." Invariably this has meant making conditions much more difficult for industries to expand and exist in our State. Recent studies dramatically illustrate the loss of hundreds of thousands of manufacturing and construction jobs in our State over the past decade. Some of this exodus of manufacturing and construction to other states is caused by New Jersey's demonstrated desire to be tougher than practically all other states on environmental controls. We feel that most industries in New Jersey compete on a national and international level. Therefore, controls should be established and administered uniformly on a nationwide basis.

These concerns help to leave us with more unemployed workers per 100,000 population than virtually all other states - a total of about 300,000 actual people at this time.

New Jersey cannot continue to carry that many able-bodied, ready and willing to work people on our unemployed and our welfare rolls. Instead of discouraging, we should be encouraging industry to stay and expand in our state. To help accomplish that goal, we should avoid "The Cancer State" designation, we should streamline State regulations, and certainly abide by national regulatory laws. We, therefore, urge you to not approve S-3035.

SENATOR AMMOND: All right. Thank you very much.

MR. APPLEGATE: Thank you.

SENATOR AMMOND: We will take a five minute recess.

(After Recess)

SENATOR AMMOND: I guess we can get started.

Ms. Marie Dunleavy, New Jersey Lung Association.

M A R I E D U N L E A V Y: My name is Marie Dunleavy and I am a Program Consultant for the Delaware-Raritan Lung Association, which serves five counties in New Jersey through various programs aimed at preventing and controlling chronic obstructive lung disease. To achieve this, air quality must be maintained at healthful levels and our purpose in offering this testimony is to further this goal.

First, we would like to express our support for the Cancer Control Act, Senate Bill 3035, proposed by Senator Skevin, whom we wish to commend for his efforts. As documented by a 1976 report of the New Jersey State Senate's Incidence of Cancer Commission, "air contamination by carcinogens is a primary cause of many types of cancer."

New Jersey is one of the largest petrochemical producing states in the nation and has the highest densities of population and motor vehicles per square mile. These factors heighten the urgency for pollution abatement and carcinogenic substance control which are recognized as serious problems by citizens of this State.

For example:

In March 1976, a poll was taken of New Jersey residents by the New York Times. In response to the statement, "The laws against pollution in New Jersey should be enforced more strongly," 84 percent of respondents agreed, with only 10 percent disagreeing. This 84 percent indicated the largest single consensus of any of the nine unrelated issues polled.

A January 1977 Opinion Research Corporation poll indicated that 68 percent of the public is willing to pay higher prices and taxes rather than risk more pollution.

In May 1977, a committee of the Medical Society of New Jersey urged action to reduce air pollution in the State because of its potential for causing cancer. The Society noted that: "New Jersey residents have the distinction of being in one of the most polluted areas of the United States. . . our high levels of air pollutants may be linked to our suffering unusually high incidence of cancer and cardio-respiratory diseases." The committee's resolution urged that action be taken to familiarize the public with "the implications of this deplorable situation" and take action to correct it.

Clearly, these indicators point to broad-based citizen concern and demand for cancer-prevention laws and regulations of carcinogenic substances.

The recent findings of the National Cancer Institute which cited New Jersey as having the highest cancer mortality rate in the nation epitomizes our State's alarming health problem, making it urgent that the State take responsibility to enact legislation to control this very serious threat to public health.

We would like to make the following specific recommendations regarding S 3035:

1. Since it is the public health which is to be protected, we urge that the findings and recommendations of the Cancer Control Council's annual public hearing be reported not only to the concerned commissioners and legislature but also to the public.

2. Since workers in industry are on the "front lines" of carcinogen exposure, special prevention, control, and education efforts should be tailored

and directed for their benefit.

3. The Act should include the provision that citizens would have the right to file suit against the responsible regulatory agency should the agency or agencies concerned fail to act within a reasonable time on control efforts.

4. The penalty for violation of the provisions of the Act, or any regulation or order promulgated pursuant to it should be increased to at least \$15,000 to better reflect the serious effects of an offense.

5. The four citizens on the Cancer Control Council should be genuine public interest representatives without an economic stake, personally or by organization affiliation, in this issue.

In conclusion, we would add that should the proposed regulatory measures be seriously weakened or not enacted, it may be essential for citizen groups to back Senator Skevin's original proposed ban on the production and use of certain carcinogens in order to protect the public. We trust that this will not be necessary.

We urge your support of Senate Bill 3035 and appreciate the opportunity to express our views on this subject.

SENATOR AMMOND: Thank you very much, Miss Dunleavy.

Mr. Edward Weisselberg, American Institute of Chemical Engineers.

EDWARD WEISSELBERG: My name is Edward Weisselberg. I am a life-long resident of New Jersey.

SENATOR AMMOND: Mr. Weisselberg, we are restricting people to seven minutes because we have one hour and twenty-five people to speak.

MR. WEISSELBERG: Let me do what I can.

I come before this Committee in three capacities and with the objective of helping the Committee arrive at legislation which will help to reduce the incidence of cancer in the State of New Jersey while, at the same time, avoiding the dangers of harming the State through unwise legislation.

Firstly, I am here as the President of a small engineering firm employing 25 people directly in New Jersey, but probably up to 200 indirectly through our New Jersey sub-contractors, etc. In this capacity, I am representative of the many small equipment manufacturing concerns located in New Jersey, who cater to the needs of the chemical and associated process industries.

Secondly, I am here as Chairman of the North Jersey Section of the American Institute of Chemical Engineers, as a spokesman for chemical engineers and engineers in associated fields, and partly to express the sentiments of our Environmental Purification Involvement Committee of the New Jersey and North Jersey Sections, and of the sentiments of the Executive Committee of the North Jersey Section.

Lastly, I am here as a private citizen to express some of my own concerns and thoughts.

New Jersey is one of the leading states in the country in the design and manufacture of equipment for those chemical and related industries called the "process industries." There are many small and large firms in New Jersey, employing probably 20,000 people, which are involved in this kind of business. These range from suppliers of pumps, solids, feeders, filters, evaporators and heat exchangers, etc., all the way up to suppliers of entire plants. Some of the largest most successful engineering and contracting firms in the world are located in New Jersey.

To a degree unappreciated by most people, this business is vital to New Jersey's economy. Not only the primary contracting, but the derivative subsidiary contracting, results in jobs all up and down the line in New Jersey. Captive shops and job shops manufacture this equipment. Proximity to the purchasing company's offices is often an important factor in deciding whether to manufacture at a particular shop. New Jersey is thus the beneficiary of these processing companies, engineering companies, and equipment suppliers being located here in many ways: the employment of our citizens, the taxes paid to our government through the purchasing power, the quality of the services and education demanded by the relatively highly educated and sophisticated population which this sphere of business employs, and, finally, from the fact that this primary and secondary manufacturing is a major industry for New Jersey.

New Jersey is in a titanic struggle to avoid losing jobs to the South and to the West, to avoid losing industry. The latest information is that it is slowing down the exodus, but it should be pointed out that provisions cited in this Bill at this point would accelerate departure and slow down any tendency to reverse this exodus. Already New Jersey has a reputation for hostility to industry. Companies are inclined to look elsewhere for manufacturing plants because of the New Jersey reputation for policies and practices which make business harder to do here than in the majority of states. In some areas, New Jersey is noted as being the strictest state. I am informed already that the original drafting of this Bill has caused a number of companies who had been contemplating locating plants in this State, to look elsewhere with preference. Even when there are no laws which are actually passed, the reputation that the State has gained for its readiness to consider steps which are hostile to industry will adversely affect its ability to draw new business and, indeed, even to hold the business industry which it has.

A large percentage of the firms furnishing engineering and equipment to the process industries, in order to sell to their customers, must demonstrate the suitability of their equipment to the customer by tests on the customer's actual product. Representations without such tests are not likely to be believed or, even if believed, are not as satisfactory as actual tests witnessed by the customers on the product which needs the processing equipment they intend to purchase.

My own small firm is representative of the smaller type of company which is in this field. We have been in business for 45 years doing a worldwide business of selling high quality, well reputed equipment to the process industries. The major part of our subcontracting has always been in New Jersey for reasons of supervising the quality of the manufacture and the proximity to our laboratories and offices.

Many of the major chemical and pharmaceutical companies in the country have our equipment and come back to us to do repeat business. Our sales regularly include sales of equipment around the world. Almost invariably, in order to sell the equipment, we must test the customer's products for him to show the quality of the product we will deliver.

Normally, our testing is on a sample of a few pounds, and from this we scale up to the design criteria that our customers need. Severe restriction or prohibition of our testing of these materials for our customers would force us to either move or go out of business. Many of the small equipment manufacturing companies that we know of fall into the same category, i.e., good reputations and good quality product, but testing is necessary in order to sell their products.

This bill, No. 3035, as originally drafted, would have provided an expandable list of materials which could never be tested. We understand this has been deleted, but even though the Section 6 of the original drafted bill, which prohibits certain chemicals from being used or handled in any way has been deleted, there is still provision in the bill for the possibilities that such a list can be drawn up under the bill by the Cancer Control Commission and without the specific assent of the Legislature.

History has shown that the tendency of such regulatory agencies is to expand and to justify their existence by conservative and restrictive administration. Concentrating on avoiding public criticism, they tend to become bars to progress and development.

The use of chemicals or other materials which are either known or suspect carcinogens is a complex one. Certainly a distinction should be made between known and suspect carcinogens. The number of suspect carcinogens listed in the 1975 edition of NIOSH lists approximately 1500 substances, many of which are naturally occurring, and some of which are concomitants of life, such as lactose, alcohols, and organic acids. Since concentration and manner of exposure and time are important determinants of the carcinogenic characteristics of a substance, and since some of these substances are vital attributes of life itself, obviously banning of all suspect carcinogens would be unwise.

Usually, when chemicals are manufactured, by-products are produced due to the chemical reaction mechanics and the purity of the raw materials. In order to sell the product competitively, these by-products are generally removed by washing and other purification steps. It is usually not economically feasible to remove every last molecule of these by-products, however, so harmless trace quantities may be present. A restrictive ban which prevents suspect carcinogens from even being present as by-products in the minutest quantity would effectively kick the chemical industry out of New Jersey.

Based upon the bannings which were originally contemplated and which are still, according to my understanding, possible under this Bill even with the deletion, estimates that as many as 200,000 jobs would be chased away do not seem unreasonable. Each of these jobs probably represents supporting a family of four, and each represents skilled labor or professionals who would leave the State if their jobs leave the State due to the governmental restrictions being too great. If the rule of thumb that each manufacturing job supports 15 derivative jobs is followed, we are talking about a tremendous amount of damage to New Jersey.

To zero in on the beneficial chemical industry when the evidence indicates that almost all of the cancer is from other sources, is dangerous and wasteful. It wastes time and money concentrating on relatively inconsequential sources of the problem instead of attacking the problem where it should be attacked. The money and effort should be going into areas of early detection, public education, and research to establish what the true causes of cancer are and to help prevent it. It is like the French spending all their money on a useless Maginot Line to defend it against Germany after the First World War, when they should have been investing in a defense against a mobile enemy.

It must be stated that I, too, as a life-long resident of New Jersey, am concerned about New Jerseyites being exposed to carcinogenic environments and

conditions. I have a long history of supporting humanitarian and philanthropic causes and am a man of compassion and scientific and environmental interests. Having worked directly with chemicals myself for many years and, indeed, having myself had heavy metals poisoning due to improper exposure in my early employment years, I am especially conscious of personnel safety in working with these materials. Because of safety concerns, I revised the questionnaire which we send out to our customers to determine their process equipment needs. The revision was the first questionnaire of any process industries equipment manufacturing company in the country to ask for a statement from the customer as to the safety of the material in the laboratory, and this questionnaire has become a model used elsewhere for this and other reasons. I am as concerned as anyone in this State about the possibilities of personnel getting cancer or, indeed, being exposed to any toxic condition, not just carcinogenic ones, for any extended period of time.

Despite this concern, I see great danger in reacting too precipitously and unwisely to the valid concern of this Committee and the people of our State; that is, the determination and control of carcinogenic hazards in this State. Banning or restricting contact with ingredients of an only vaguely determined degree of hazard, but necessary to this State's well being through its job and industry contributions, will harm the citizens of this State, not help it. We have seen the damage over-zealous and unwise governmental action can do in the swine flue vaccination program of 1976 and the cranberry scare of 1959. In both cases, the damage done by the government's alarmed action was far greater than was realistically likely from the original source of concern. Simply put, the cure was worse than the bite. Even though the government's intentions were good, to those unfortunate victims of the government's imprudent haste, the residue was damaged lives far beyond what would reasonably have been expected had the governmental authorities taken the care to collect additional data and determine the true state of things.

Similarly, more investigation is needed as to what are the real determinants of the various types of cancer which are found in this State in amounts significantly above or even at the national average. Newspaper stories calling New Jersey "Cancer Alley" and headlining "New Jersey No. 1 in cancer" may serve a purpose in arousing interest in solving the problem, but they also perform a disservice by scaring the daylights out of people so that the proper scientific investigation and presentation of the facts are not welcome. Immediate panaceas are demanded. Even the fact that these alarming conclusions are based on erroneous and simplistic interpretation of the data is ignored. The fact that New Jersey is not number 1, unless the data are handled in a certain questionable way, gets submerged.

In looking at the data from which this claim that New Jersey is No. 1 in cancer was made, one finds that it has been distorted. In this data, which is considered by most experts to be outmoded and of questionable accuracy, the District of Columbia exhibited a 30 percent higher rate of cancer mortality in its dominant male population group than New Jersey did in its dominant male population group. Why, therefore, is the District of Columbia omitted from consideration when this claim is made? Is it merely because it is not a state? One would suspect it is omitted because it is not expedient for those people who wish to make political hay out of the claim that New Jersey is No. 1 in cancer. After all, what is the District of Columbia noted for? Certainly not its chemical industry, for there is none there - sometimes not even for its legislation. Demographically it is known for being the single

totally urban political entity, which shows up in a state-by-state tabulation. This is significant. In general, higher rates of cancer are associated with more urban areas. And New Jersey is one of the most urbanized states; in fact, the most urbanized state due to the influx of residents from the cities of our neighboring states into it. Since cancer usually takes roughly 20 years to show up, any of these people dying of cancer within 20 years of immigrating to New Jersey would be importers of it. This, however, was not investigated in the study so that these people would show up as mortality statistics, thus unwarrantably implying greater hazard to living in New Jersey than is warranted by the facts.

Another distortion of data is the citing of asbestos. Asbestos, itself, is inert and non-carcinogenic in a chemical reactive way. The latest evidence indicates that it is a particular type of asbestos which has been shown to be particularly hazardous, and even this form is not isolated on asbestos, itself, but on the long needle-like dimensions of the particles. That means that any particles of that dimension would tend to cause cancer. Considering the immense benefits from asbestos, it would be foolhardy to prevent its use in fire-fighting equipment, hot operations where it is necessary to safety, automobile and truck brakes, and for other industrial applications where there are not good substitutes and it is an important safety factor, or where the fibers are locked in safely, as in many construction materials. Most of the carcinogenic behaviour of asbestos is tied in with relatively short needle-like crocidolite, and other types of asbestos with longer fibers are not as implicated. A parallel concept would be that because kitchen knives are fairly often used in murders, all knives should be banished.

If all carcinogens and suspect carcinogens were banned, we could not drive automobiles because gasoline would not be available; we could not eat many of our favorite foods because some of the preservatives used in them would be banned and they would spoil; we would have a higher incidence of death from other causes, such as automobile accidents and fires; and, in addition, our cost of living would be considerably higher and our quality of life would decrease. Indeed, certain chemicals in foods, such as BHT preservatives, are believed by some experts to be even beneficial in reducing cancers.

In addition to my own comments, I herewith present a statement by the Environmental Purification Involvement Committee, called EPIC, of the New Jersey and North Jersey Sections of the American Institute of Chemical Engineers. It represents the combined viewpoint of these Sections. EPIC aims after careful consideration of the stated legislative aims and the means which are proposed to attain them. Chemical engineers as a group have a special awareness of the facts concerning air and water pollution, energy, and public health. It is the duty of our professional organization to bring, as much as possible, this knowledge before the public for the overall public benefit when such matters are being legislated.

There are 10,000 chemical engineers in New Jersey approximately and I want to make clear that I do not speak for the national organization, which has not been consulted on this matter.

In regard to Senate Bill No. 3035, EPIC has the following comments:

Regarding Article 2, in general, we agree that the State of New Jersey should be concerned with the mortality rate for cancer in this State, just as every state and the federal government should be concerned about it within their jurisdictional boundaries. It is important, however, that this legitimate concern should

not be overpowered by false and misleading statistics. These can only lead to rash and reckless corrective means, which in the long run will primarily hurt the people of our State, not help them.

New Jersey is not No. 1 in the U.S. in cancer mortality based on an American Cancer Society estimate made in 1974. This ranked New Jersey 12th among the states. Further, the percentage of all cancers that are industry-related is very small and may account for no more than 6 percent and possibly as low as 1 percent of the total. Consequently, we do not understand why S 3035 is only directed toward the chemical industry.

The facts are that New Jersey had a rate of 184 deaths per 100,000 population for cancer from all causes, as recorded in the ACS 1974 statistics. Maine, Rhode Island, West Virginia, New York, District of Columbia, Florida, Pennsylvania, New Hampshire, Massachusetts, Montana and Nebraska were all higher.

New Jersey has 10 percent of the total U.S. chemical industry. No other state has such a high concentration of chemical manufacturing. Yet, New Jersey ranks 12th and is below other industrial and even agricultural, resort and rural states. The risk of cancer is greater in the Nation's capital, where there is no chemical industry, than in New Jersey.

Modern chemical industry practice has reduced the exposure to carcinogens rather than increased it. This is the result of voluntary controls imposed by companies to protect their workers, supplemented by federal regulations.

EPIC concludes that, based on the current status of technology, existing federal and state laws and regulations provide adequate controls for chemical emissions and, therefore, we do not see the need for a Cancer Control Council.

As technology advances, these laws and regulations should be improved. If the State of New Jersey is not satisfied with either the current status of technology or the rate of technical advancements, then the State through the Department of Environmental Protection should express its concerns to OSHA and EPA. The important point that we want to stress here is that a federal regulatory system already exists which is capable of handling this type of problem and has already been doing so for a number of years. New regulatory agencies like the Cancer Control Council are not needed. Rather we should work through the system we have. In this regard, EPIC suggests that the DEP establish a Cancer Advisory Committee which would serve as a fact-finding organization, advise the DEP on new developments in cancer research, and make recommendations to DEP on the future course of action to reduce cancer mortality in New Jersey.

SENATOR AMMOND: Mr. Weisselberg, I read the balance of your statement and it pretty much summarizes what other industry representatives have contended.

MR. WEISSELBERG: Can I make my personal comment?

SENATOR AMMOND: Yes, of course.

MR. WEISSELBERG: I would like to add one comment as a private citizen. Our taxes are increasing due to too much government regulation and waste. New Jersey's government has had a terrific increase in its budget, far beyond what inflation can explain. Bureaucracy in government regulation has expanded at the expense of the people. Daniel Yankelovich, famed poll taker, has said, "All of our surveys for the last decade showed that every year more and more people are coming to believe that the part of their lives that they are able to control is diminishing." In the New York Times of June 12th, Mr. Yankelovich said, "the American people believe

that it is an arrogance that people don't know what is good for them and that there should be a law to protect them. They don't want to give the government the license to enter every nook and cranny of their personal lives." And on June 8th, Mr. Robert T. Quittmeyer, President and Chief Executive of Amstar Corporation, was quoted in the Wall Street Journal as making the following comments about regulatory agencies: "If you scratch an advocate of regulation, you will likely find very close to the surface an arrogant impulse to substitute some personal vision or order for the apparent disorder of the marketplace. . . . When arrogance is embodied in public policy, whether by legislation or administrative fiat, there are no effective checks on it. It becomes institutionalized and immortalized."

Over-regulation and over-bureaucracy are in themselves a cancer - a cancer on the body politic. They perniciously affect the health of the economy, they paralyze initiative, they inflict excruciating pain on those with fixed incomes and the poor. They condemn those residents of the State who are not able to keep up with the costs of living and taxes to a debilitating, frightening, and heart-rending existence.

I take this opportunity to make this statement, because it is not frequently that a plain citizen can make such a statement in this forum, and I trust it will fall well on the ears of those who can do most about it.

I protest too much government and the expense which it costs.

SENATOR AMMOND: Thank you, sir, and we welcome the opportunity to have "plain citizens" testify. Thank you.

Mrs. Harriet Wax.

H A R R I E T W A X: My name is Harriet Wax. I lived in Bergen County until my marriage nineteen years ago, since which time I have resided in Essex County. I am a member of a Task Force studying all aspects of cancer in New Jersey: types, causes, effects, and, most important, the steps being taken by our Legislature to curb this dangerous disease.

We live in a state that has the highest chemical production in the United States. We also live in a state that has the highest cancer rate in the nation. From the studies of our group, there seems to be a direct correlation between the high incidence of bladder cancer in Salem County and the chemicals, such as beta naphthylamine and benzidine, which had been previously produced therein, and of lung cancer in the Paterson area where asbestos has been, and is still being, manufactured.

One question keeps recurring in my mind: Are the workers in these plants completely aware of the carcinogenic nature of the chemicals being produced and the fact that it might take fifteen to twenty years before the carcinoma emerges?

It was interesting to learn today that major chemical companies, such as duPont, B. F. Goodrich and American Cyanamide, have complied with EPA standards or are in the process of doing so. They are keeping records of reported cancer cases, are doing psychological studies, etc. But I must point out that all chemicals in New Jersey are not produced by the major chemical companies that have the staff and the money necessary to do studies, revise equipment, etc. We have many, many small companies manufacturing the sixteen chemicals that are on the banned list.

There should be either a complete ban of the known carcinogens or a stringent monitoring system.

The gentleman who preceded me talked about statistics not being accurate on cancer death rate. He said that a person who had moved to New Jersey and died of cancer had probably contracted it elsewhere twenty years before. Well, the converse is also true. Someone who worked in the chemical industry in New Jersey and subsequently moved to Florida or Phoenix - that statistic would be shown up under that state and not under New Jersey since it takes twenty years for cancer to emerge.

Also speaking as a private citizen, I am very much alarmed that my family and I are exposed to carcinogens in every aspect of the environment, as well as in the foods. And I am here to strongly urge passage of Bill 3035 in its present form or in some similar form. I also hope that Bill S 3034 will receive prompt and positive action.

Thank you for giving me the opportunity to speak today.

SENATOR AMMOND: You are very welcome, Mrs. Wax.

Mr. Wildgen, Union Carbide Corporation. Did I pronounce your name correctly? Oh, I didn't because that is not your name.

T H O M A S W. C A R M O D Y: My name is Tom Carmody. Mr. Wildgen is also with us. He is in the back of the room.

This starts off with "good morning." I guess I am a little late.

I am the Corporate Director of Occupational Health for Union Carbide Corporation. As many of you are aware, we have a number of manufacturing operations in the State of New Jersey; the total number of employees working for Union Carbide in this State is over 3,000.

Frequently, I am asked, are you a medical doctor? The answer is no. My business experience with Union Carbide over a period of 27 years has been as an engineer, salesman, Divisional Vice President of a business group, and for the last several years in the work area associated with the environmental efforts and occupational health efforts of Union Carbide. My present responsibility is to manage and reduce the occupational health risks of our employees by integrating the efforts of our highly professional people in the areas of medicine, industrial hygiene, toxicology and engineering. It is Union Carbide's corporate stated policy to persistently review and improve our practices to protect the health and safety of all our employees.

We appreciate the opportunity today to comment to you on Senator Skevin's legislative efforts in the cancer area. First of all, we wish to congratulate the Senator on his vigorous efforts to attack the cancer problem in New Jersey. His efforts are no doubt in response to the recent U. S. research reports that identify types of cancer in various regions of the country. However, like many early research reports, the U. S. Study raises more questions than it answers. You heard many of them today. The U. S. Government itself suggests that the reports are a starting point only. As we all know, throughout the U. S. today, there is a tremendous amount of work going on in the cancer area to understand the causes of cancer and to push for solutions. Industry, including the chemical industry, are among those sponsoring extensive research in this area. And I could go into some details there if you care too.

We believe Senator Skevin's bills A 1090 - the Cancer Reporting Act; S 1758 - the Cancer Registry Act; and S 3024 - the Early Detection Act, are

positive steps to improve our overall knowledge in the cancer area. We suggest that the administrators of these acts try to tie in the reporting systems that are developed with the national systems for the betterment of both.

With respect to S 3050, however, we respectfully suggest it is unnecessarily redundant compared to the major federal legislation presently on the books.

Several years ago, the President's advisors in the body of the Council of Environmental Quality (CEQ) conceived of a total comprehensive system of legislation to protect the health of the American public and the health of our environment. The general concept was to develop a set of laws that regulated all materials leaving all manufacturing or processing operations, be they public or private. Thus we first had the Air Law of 1970; then the Water Law of 1972. Last year, the final two pieces of legislation in the overall scheme were passed: the Solid Waste and Recovery Act and the Toxic Substances Control Act. Incidentally, I want to point out it is called the Toxic Substances Control Act; it is not just chemicals - all materials that cause cancer. Thus, with these four pieces of legislation, all materials that leave any operation, be they the waste products or the finished products, are regulated by the federal government with the sole purpose being to protect the health of the public and to preserve our environment.

The new Toxic Substances Act focuses on new products, as well as existing products of commerce. This Act has strong provisions to protect the public against hazardous materials, carcinogenic or otherwise. For example, all manufacturers must report new products that are to be manufactured and sold. If they are not reported to the federal government, the manufacturer or processor is subject to a fine of \$25,000 per day. Individuals are subject to criminal penalties for wilful violation in addition to or in lieu of the civil penalties of up to \$25,000 per day, per person. These are extremely severe penalties. I think some of the people here today suggested that you have such penalties in your law. They already exist in the present federal law.

The original '78 budget for the Toxic Substances Control Act was \$12.5 million. Mr. Costle, the new EPA administrator, asked for \$29 million for '78; Congress told him last week to spend \$50 million. Somebody mentioned a considerably lower number a while back. As this agency studies all toxic substances, they will be using all the knowledge we have in the United States to make their determinations. This includes the National Cancer Institute, the National Institute of Health, ERDA, NIOSH, private laboratories, such as the American Cancer Society, and industry laboratories. These are massive amounts of money and massive research is going on - and they will have those resources. For example, NCI has a budget of \$700 million a year.

Thus the Toxic Substances Control Act is the last piece of the federal environmental health legislation placed into law to protect man and his environment. The Air and Water Laws are mainly focused on health, although we usually think of them as beautification laws. An example of how effective these federal laws have been to date in protecting the health of our workers and the general public is the vinyl chloride story. You have heard part of that before. This is a little different way of thinking about it.

In 1974, vinyl chloride was first identified as a health risk to workers. After extensive hearings, the Occupational Safety and Health Administration issued a regulation which controlled exposure in the workplace to one part per

million for an eight-hour period. This regulation survived extensive court review. Meantime, the Environmental Protection Agency issued an extremely tight regulation governing the emission of vinyl chloride into the atmosphere. This EPA regulation will result in the total national emissions for all vinyl chloride being reduced by more than 95 percent. Here we have an example of how existing federal laws did provide the protection we are all looking for.

S 3035 proposes to add another layer of regulation by prohibiting or regulating the production or use of vinyl chloride by the State of New Jersey. Such action would be duplicatory of what the federal government has already done after massive dialogue, study and litigation.

In most European countries, the occupational health standard is 10 part per million for vinyl chloride. So, as you can see, our federal process is actively providing a very high level of health protection.

New Jersey did not elect to take advantage of the provisions of Section 18 of the Occupational Safety and Health Act Law to develop permanently a state plan for the regulation of workplace hazards which would enable the State to avoid pre-emption of health rules by the federal government. Further, if New Jersey were now to endeavor to regulate in the area of occupational health, it would have to obtain federal approval. Thus, S 3035 is piecemeal legislation which seeks to reverse New Jersey's original decision without conforming to federal requirements. And further, we believe S 3035 would add nothing to the Occupational Safety and Health Act to protect the worker. It would only conflict with the present Occupational Safety and Health Administration requirements. We support adherence to existing regulation and rules rather than the promulgation of redundant state regulation. Redundant state regulation is likely to be productive of extensive litigation rather than of supplemental protection of employee safety and health.

We agree in principle with the non-regulatory provisions of S 3035 that addresses the need for research and educational programs on the causes of cancer. We agree that research and education are necessary, but see no need to require them in a bill where these worthy purposes are intermingled with counterproductive regulation. We should state that these constructive programs, to be meaningful, should broadly cover all non-hereditary causes of cancer - non-hereditary causes frequently are referred to as environmental cancer. These other significant causes, in other words, non-hereditary, include dietary habits, tobacco, as well as occupational exposure. All non-hereditary causes of cancer cry out for educational programs that should be directed to all of the public.

In short, we suggest strongly to you that S 3035 can never do for New Jersey what the comprehensive federal laws already in operation can do for the State.

Thank you very much.

SENATOR AMMOND: Thank you very much.

Mrs. Mary Feldblum. (Not present.)

Dr. Cochran from Stauffer Chemical Company. After Dr. Cochran is Mr. Sanford Lewis, Central Jersey Sierra Club.

J A M E S E. C O C H R A N: I am James Cochran, Technical Director, Specialty Chemical Division, Stauffer Chemical Company in Edison, New Jersey.

Madam Chairman, and members of the Senate, Energy and Environment

Committee: This statement is submitted on behalf of Stauffer Chemical Company and sets forth our comments on Senate Bill S 3035, the proposed Cancer Control Bill. Stauffer Chemical Company is a manufacturer of industrial and agricultural chemicals, plastics, food ingredients, detergents and specialty chemicals which include drug intermediates. Stauffer has long had a concern about public health and the health and safety of our employees. We share the concern of this Committee about such dread diseases as cancer and products and conditions which could contribute to the carcinogenic problem. As a company, we carefully monitor the working conditions of our employees as well as the products with which they work and which we put into the marketplace. We support measures to set standards for the safe handling and control of chemical products. We do, however, have serious reservations about this legislation which attempts to accomplish very worthy objectives in a manner we believe will not bring the desired results and which creates additional serious problems in the process. Despite the good intentions shown in introducing the bill, we recommend that you seriously review it in the following light:

1. This bill could tend to frustrate the conduct of research and development aimed at discovering new life-saving drugs.
2. The creation of a Cancer Control Council dominated by non-technical public members puts very highly sophisticated technical decisions in the hands of non-experts. Products may be banned simply because there is a suspicion that they may cause adverse effects without hard scientific data.
3. The bill duplicates federal legislation and regulatory activities.
4. The bill could have an adverse impact upon jobs and commerce in New Jersey, as well as in other parts of the country.

To put these factors into perspective, it should be pointed out that several products affected by this bill are manufactured by Stauffer in New Jersey. They are intermediates used by the pharmaceutical and health-care industries in the production of leading penicillin and cephalosporin antibiotics as well as sanitizers and/or germicides, and these products are all critical to human health. The resulting impact upon the pharmaceutical industry could be considerable. The total antibiotic market in the United States is approximately \$800 million per year and this bill could reduce that by \$200 million. It is entirely possible that such a drastic reduction of revenue to the drug industry could seriously affect the conduct of expensive research and development aimed at new life-saving drugs.

The bill as presently worded would prohibit the manufacture of these products. It would even prohibit generation of de minimis quantities of such materials as transient products which are destroyed in the synthesis process or properly controlled such that unreasonable risk to health is eliminated. The result of a ban would be the eventual loss of more than 150 jobs for employees at Stauffer plants in New Jersey, with the resulting annual loss to state and local areas of more than \$60,000 in income taxes, \$130,000 in property taxes as well as the associated state unemployment insurance taxes and sales and use taxes. The domino effect upon jobs in the drug industry in New Jersey and the additional loss of taxes here would be even greater.

Contrary to the opinion that has been expressed in earlier hearings on this bill, substitutes for many of the 16 substances in Section 6 of the bill cannot be easily found. This is particularly true for drug intermediates. Even if

substitutes were available, it would take considerable time to develop, test and receive the necessary production and marketing clearances from the Food and Drug Administration, Environmental Protection Agency, the Occupational Safety and Health Administration and other regulatory agencies.

There are indications that the sponsors of this Bill plan to delete its banning provisions. Even if such provisions were stripped from the Bill, many of its other features remain duplicative of present state and federal legislation.

I am going to skip several paragraphs here because they simply relate to the facts that have previously been stated about laws that exist in New Jersey; namely, the New Jersey Statutes Annotated for air and water pollution, dealing with Sections 4 and 5 and Section 26, where laws are provided to protect the environment and the public health and the health of individuals in the workplace.

My other paragraph following that is simply also an indication of the duplication which has been mentioned before where we have both New Jersey organizations and federal organizations, such as OSHA, EPA and TOSCA to handle the protection of individuals and the environment against dangerous chemicals.

I would then go on to say, this duplication could cause possible conflicting standards of regulations, with resultant uncertainty of compliance by the affected manufacturers.

The cancer issue is complex and needs careful and deliberate consideration and research by experts. We support an early cancer detection program and a cancer registry program. We question the advisability, however, of the creation under the Cancer Control Bill of a Cancer Control Council which is made up of seven members, four of whom are appointed from the general public rather than technically qualified experts in relevant scientific fields, such as medicine, toxicology, engineering and environmental science. The chairman and vice-chairman of the Council would likewise be selected from members representing the general public.

I am going to omit my next paragraph because it also deals with the fact that, as opposed to the Council concept, there are federal and other existing laws to take care of these problems.

Then, in conclusion, as we stated at the outset of our statement, Stauffer Chemical Company is deeply concerned about the health and safety of our employees and of the general public.

We oppose this particular bill, however, because we believe it would be counterproductive. It duplicates federal laws already on the books. It gives laymen the option of banning products on suspicion alone. It could close the door to future productive research and development which could lead to disease control and prevention. It could put people out of work. For these reasons, we urge the New Jersey State Legislature to carefully reconsider the need for Senate Bill 3035.

This concludes the statement of Stauffer Chemical Company and I appreciate having the opportunity to present it to the Committee.

SENATOR AMMOND: Thank you very much.

Sanford Lewis, Central Jersey Sierra Club.

I think we are going to make our remarks even briefer after this. We are going to have to adjourn at five o'clock and there are still a few witnesses left.

SANFORD LEWIS: Good afternoon. My name is Sanford Lewis and I am speaking for the Central Jersey group of the Sierra Club in calling for passage of

S 3035.

Although by now I am sure you are quite familiar with the statistics on cancer, I would like to explain briefly how they affect me personally.

As a recent graduate of Cook College, I am currently faced with a decision. It is time to find a job and a place to live.

The most obvious location is New Jersey, a state with almost everything. It has plenty of employment opportunities, a close proximity to New York and Philadelphia, shores which are usually clean and swimmable, as well as extensive natural beauty.

But, according to our Department of Environmental Protection, of the 50 states, New Jersey was also the one with the highest cancer mortality rate for males, and the second highest rate for females, from 1950 to 1969. The American Cancer Society estimated that 25 percent of the 213 million people in the U. S. will ultimately develop some form of cancer. I have to seriously ask myself if I am justified in increasing my own risk.

This is where I grew up and where my family and friends live, but I have to balance that against the unhealthiness of the environment. The statistics hit home, not just to me and those at my stage of life, but also to those considering moving in. That includes businessmen who are thinking of relocating here. It isn't just, as others have implied today, a bad rap that New Jersey has gotten the nickname of Cancer Alley. There is clearly something wrong.

The cancer rates are discouraging, and worst of all, there is no reason to tolerate them. It has been estimated that between 60 and 90 percent of all cancers are related to environmental factors. Yet, of all the agents in the environment, probably only a small fraction, perhaps less than one percent, are responsible for this effect. Control of these substances is necessary if we ever hope to make this state a safe place to work and live.

The Cancer Control Act wisely empowers the Commissioner of DEP to issue rules conditioning and controlling the release of carcinogens to New Jersey's air, water or land. We strongly support this legislative concept and urge its prompt enactment into law.

Thank you for this opportunity to speak.

SENATOR AMMOND: Thank you very much.

Do we have a Mr. Rooney here from the Bergen County Chamber of Commerce? After that is listed Walter Payne, Toms River Chemical Company.

T H O M A S C . R O O N E Y , J R . : My name is Thomas C. Rooney, Jr. of the Chamber of Commerce and Industry of Northern New Jersey, formerly the Bergen County Chamber of Commerce. We just changed our name, so any future correspondence will be under the new name.

I submitted a written statement. I am not going to read it. I would prefer to make several other comments based on the testimony which we have heard today and which I feel are proper supplemental remarks to those contained in our statement.

We have two primary objections to S 3035: Number one, it is a duplication. This has been adequately covered by previous speakers in great detail. The State of New Jersey cannot afford any unnecessary duplication of any government agency or function at this time. We have excessive taxation already. The State will be

faced within about a year with a possible loss of the income tax. We will have additional fights in this Chamber - and I have already sat through at least a dozen. There will be financial problems, one way or the other. So any agency which does not have to be created should not be created. We cannot afford it. If someone else is already doing the job - and so far today the testimony is overwhelmingly in support of that position, then there is no reason for us to be taxed additional moneys in order to do what someone else is already doing.

The second item is our objection to something which is best expressed in the the term used by Dr. Elizabeth M. Whelan, "cancerphobia." I have included a copy of her full article which appeared in April's "Harpers Bazaar" and we ask that it be put in the Committee records for several reasons. First, it summarizes very adequately in laymen's terms the facts about cancer and what the realities are. Secondly, it is written by Dr. Elizabeth Whelan, who is a Research Associate at the Harvard School of Public Health, and it is highly unlikely that it would be a spokesman for the New Jersey chemical industry or any chambers of commerce. Thirdly, because it is written not specifically to New Jersey, but for an audience nationwide. It refers to the national cancer problems and statistics.

Yet the striking thing is that the conclusions which Dr. Whelan reaches support the positions which were taken today by the business spokesmen, those who spoke against S 3035. It does not support the positions taken by those who were in favor of 3035.

Several quotes from this are appropriate. The term "cancerphobia" is one that we have not heard before. Yet the reasoning is the same as someone who has a phobia about anything else - a phobia about height, a phobia about riding in automobiles, on trains and planes. There is a danger, but our understanding of it and our response to it should be rational. She says: "Americans are in the grip of a new disease, the symptoms include anxiety, distrust, fear and occasional anger, resentment, panic and emotional outbursts. Susceptibility is nearly universal - old, young, male, female, highly educated or not. Generally transmitted by unsettling books, articles, newspaper headlines and television shows about ill health in America, the malady is cancerphobia. And if it continues to spread, it will ultimately hurt all of us.

"There is, of course, a real basis for concern - indeed, anxiety - about cancer and one's own chances of developing it. One in four Americans alive today will eventually suffer from this disease. But many cancer facts are now being distorted and a bad situation is being made much worse because of a growing misunderstanding about risks and underlying causes."

She says the only remedy for cancerphobia is reason - and a hefty dose of facts to neutralize the cancer rumors which now surround us.

She goes on to say that with all the attention being given today to cancer that many people have come to believe that the United States is No. 1 in cancer in the world, similar to how many people believe New Jersey is No. 1. She then goes on to say we are not - we are No. 19 or whatever it may be. But local studies of cancer incidence again suggest that the U. S. is about average for a country with its lifestyle.

She also goes on to say what other speakers have said today, that the cancer rate in America is not up; it is not higher now than it was decades ago.

More people are dying now of cancer because there are more people. But, at the turn of the century, people were dying of scarlet fever, whooping cough, diphtheria, pneumonia, influenza or tuberculosis before cancer had a chance to affect them.

In a further quote from her, she says, "But even more important in evaluating cancer trends is the fact that only one form of cancer has increased significantly in the past four decades: lung cancer. The death rate from lung cancer among American men has increased more than 20 times since the early 1930's, and is steadily rising among women... Were it not for the upsurge in lung cancer deaths brought about by smoking since World War I, the overall cancer death rate in this country would be declining."

She then goes on to the same point that has been covered again and again by the speakers today that 80 to 90 percent of cancer is environmentally caused. "Understandably, when you hear that," she says, "you may picture polluted streams and city air, contaminated workplaces, fields being sprayed with insecticides and food labels with a string of unpronounceable names. This reaction is probably due to media reports that have taken 'environmentally caused' to mean 'caused by environmental pollution', as if they were synonymous."

She then gives the same breakdowns as other speakers about the percentages from smoking, alcohol, diet and the rest.

One of the disturbing things about today's hearing to me has been the apparent refusal of those who spoke in support of this bill to recognize that environmental factors do not mean exclusively and specifically industrial causation. They somehow have gotten by that smoking problem and the alcohol problem and zeroed in on industry, ignoring the fact that unless you do convince the young people to cut down or stay away from cigarettes and alcohol, you are going to have them dying of this major cancer killer years from now.

You asked earlier for suggestions as to what could be done educationally. Perhaps the only way to really have any effect is to go into the schools with slides or similar shows of lung tissue taken from someone who died of cancer compared to a lung of someone who did not, to shock and jolt them. Or perhaps you could have doctors go in and speak to them, and nurses, or bring some of the students into cancer wards, terminal wards, without embarrassment to the people suffering from the cancer, because unless those young people become thoroughly convinced that this is what lies ahead for many of them, they will take up smoking and twenty years from now there will be other people sitting here in our place, wondering what they can do to cut down the death rate of cancer in New Jersey.

This approach is so important, but I don't know what you can do to really bring it across. It seems some people have their minds made up already - industry is convicted - in spite of all the testimony presented here today by competent witnesses, presenting facts, proving that New Jersey is no longer number one in the nation in the mortality rates from cancer. In the last hour and a half, I specifically heard four separate speakers get up here and make the flat statement that New Jersey is number one in mortality in cancer in the United States, just as though they had not been listening all day or rejected the factual data that was presented by earlier speakers.

If we do not get away from this excessively emotional reaction to the cancer problem, it will never be solved. The only way it is going to be solved is

by people in industry and out, in medicine and out, placing the whole thing in perspective, understanding exactly what the major causes are and taking steps to stay away from them. We must not get some kind of a scapegoat that will be nonproductive and divert the attention away from the major causes.

We have, as earlier speakers said, a very severe employment situation in this State. The Legislature, itself, is concerned over it. I think all the Senators received a copy of the report which was prepared by New Jersey Manufacturers Association. This was a study that was done on the employment problem in New Jersey and dealt with our reputation of being anti-business and what can be done to correct it. I refer you, Senator, to your copy, pages 5 and 6, because it refers to legislation.

SENATOR AMMOND: I have read it. I am very well versed in it.

MR. ROONEY: Legislation which is merely introduced, not necessarily passed, has done severe damage to the possibility of attracting business to this State. We, specifically, have already heard from businesses in other states who do not comprehend at all why we appear to be so determined to paint New Jersey in such a miserable light.

"Cancer Alley," absolutely ridiculous. "U.S. Cancer Capital," absolutely false. Those who repeat it are condemning this State to a situation in the years ahead that will make our present problems seem like child's play. We have to deal with facts. We have to deal with reality. We have to get away from this emotionalism and this zeal on the part of some to pinpoint business inaccurately as being, by implication, the major cause of cancer in New Jersey. If they don't get away from this, everything you are doing here today is a waste of time.

We hope that S 3035 will be rejected. We support the other two bills with the reservation that was made about the cancer registry. I have spoken to Senator Skevin and Senator McGahn about it already. That could bring about a situation where a doctor might decide not to tell a patient that he has cancer with the approval of the family and then suddenly an inspector from the State comes with a questionnaire and asks the patient about his smoking and drinking habits. It was admitted that this would let the patient know that he does, in fact, have cancer, even though his doctor did not tell him that. So precautions have to be taken in this information-gathering system and method to make sure that the doctor-patient relationship, the privacy, is not tampered with or interfered with by anyone. Whatever can be done on that is essential.

SENATOR AMMOND: It is not my object to take up the time of other witnesses. We said we were closing at five o'clock. But I do have one statement. It is the obligation of government and industry to work together to seek solutions to problems, not to act as if we are warring with each other - and not, who is the enemy and the bad guy or who is the good guy. I think today one thing came out; and, that is, the industry thinks they are the enemy. I feel very disappointed about that because what happens then is we polarize and we shouldn't polarize our opposition. We should be working together to seek a solution. There are problems and I don't think it is right for the industry to say there are no problems, nor do I think it is right for the other side to say industry is to blame for everything. We ought to find a common ground and that is where the sense of perspective is.

MR. ROONEY: Right. But I don't recall any spokesman of industry say that there is no problem.

SENATOR AMMOND: Yes, but the problem is being shifted to other environmental causes.

MR. ROONEY: --- which by all the data that we have are the major causes. One cause, for example, is ---

SENATOR AMMOND: Well, we don't really know that.

MR. ROONEY: We don't know what the causes of cancer are?

SENATOR AMMOND: We don't really know what the major causes are. There is not enough empirical scientific evidence really, outside of smoking and lung cancer, and smoking and heart disease. So I think a good scientist always leaves all options open. That is all we are saying. Thank you very much, sir.

(Written statement and article entitled, "Cancerphobia", submitted by Mr. Rooney can be found beginning on pages 93X and 98X, respectively.)

SENATOR AMMOND: I think we had better give two minutes to another speaker. Mr. John Weber, City of Newark.

J O H N H. W E B E R: My name is John Weber and I am from the City of Newark's Air Quality-Transportation Control Program. I would like to thank you for the opportunity to testify here this afternoon.

The topic that is being discussed at this hearing today has gained state-wide attention during the past several months. The tremendous controversy associated with the cancer issue in New Jersey, is still, for the most part, unresolved. The Cancer Control Act which Senator Skevin is proposing is an initial step in the right direction to alleviate the hazard that carcinogenic substances pose here in New Jersey. The intent of this bill is not to shut down the chemical industry in New Jersey, but rather to carefully regulate the carcinogenic emissions so that the environmental rights of New Jersey citizens are not compromised. We believe these two views are compatible.

Our office strongly supports the view of the Senate Commission on the Incidence of Cancer which states, "Chemical substances should be judged guilty until proven innocent, with the burden of proof on the chemical and the benefit of the doubt extended to the people." To do otherwise is an injustice to the people we are supposed to be protecting.

The critical themes in the debate are the degree of protection needed and the actual risk imposed by carcinogenic substances utilized or emitted by industries in New Jersey. This controversy has arisen because of conflicting laboratory findings, insufficient data, unknown factors, synergistic effects and a multiplicity of other factors. The multi-faceted components of cancer etiology will probably not be fully unraveled for several decades. The question we face today is whether we can afford to wait that long before taking definitive action. Based on the current statistics and other information already available, it seems incumbent upon the State of New Jersey to initiate firm action whenever possible to reduce the risk of exposure to carcinogenic substances. It would be relatively easy for the State of New Jersey to hopefully await the action on these same issues by federal authorities. How long this may take is yet uncertain.

Reflecting on the cancer rates, we find that perhaps five percent of the deaths are attributable to industry. Some sources place the figure considerably higher. In either case, the exact figure is not really of paramount concern here. The purpose of S 3035 is to reduce the risk and subsequently the death rate from

cancer by minimizing the risk imposed by industrial carcinogens, whether it is a five percent of twenty-five percent contribution to the total death rate.

One of the better indicators for occupational cancer influences was published by the National Cancer Institute under the title, "Cancer Mortality in U. S. Counties with Chemical Industries." In this study, a total of 139 United States counties that had a high percentage of their working force employed in the chemical industries were examined with regard to mortality rates for lung, liver and bladder cancers. For New Jersey, Middlesex County was identified in an analysis of counties found to be at "high risk" for lung cancer. For bladder cancer, four New Jersey counties fell into the high risk group: Gloucester, Passaic, Salem and Union. All of these counties have a sizeable portion of their work force employed by the chemical industry. Furthermore, the occupational component is more clearly defined since the excess deaths - in other words, those over the national average - were almost exclusively restricted to the male population. The authors attribute these excess deaths to occupational factors.

These types of studies together with other investigations on specific carcinogens have repeatedly pointed toward an occupational hazard with many industrial carcinogens. The recent emergency regulations promulgated by OSHA concerning benzene exposure in the workplace are consistent with this trend. In fact, all of the carcinogens listed by OSHA have been regulated because of occupational hazards.

Unfortunately, the present federal regulations administered through OSHA deal only with occupational exposure. The associated air emissions are being dealt with only to a limited extent by the Environmental Protection Agency under section 112 of the Clean Air Act which regulates hazardous air pollutants. At the present time, only four such pollutants are controlled by these regulations: mercury, asbestos, beryllium and vinyl chloride, the last three being probable carcinogens.

There is a continuing need to intensify DEP's program of reducing carcinogenic air emissions. DEP took a first step in this area by proposing regulations for a ban on spray-on asbestos this past March. Regulations are still needed for a host of other carcinogenic materials which are being emitted daily throughout New Jersey.

In the City of Newark, there are several companies which presently emit benzene, chloroform, trichloroethylene and vinyl chloride. All of these substances have been included on DEP's list of "selected environmental carcinogens." In addition, tank farms storing thousands of gallons of benzene and trichloroethylene, etc., are also adding to the burden via evaporative losses. DEP has partially controlled storage tank emissions under its regulations for volatile organic liquid storage, subchapter 16; however, more stringent criteria needs to be established for those substances which have been designated as carcinogens.

To achieve all of these goals, passage of S 3035 is needed to gain the funds and authority for DEP and the Department of Health to effectively function in the control of carcinogenic substances. We, therefore, concur with the concepts contained in the Cancer Control Act and recommend its passage. Thank you.

(Written statement submitted by Mr. Weber can be found beginning on page 99X.)

SENATOR AMMOND: Thank you very much for being so brief.
Dr. Selesnick.

D R. L E O Y. S E L E S N I C K: Madam chairperson and members of the Committee: My name is Dr. Leo Y. Selesnick, and I am Chairman of the Board of Bass Transportation Company, hereafter referred to as Bass. More than that, I am a widower. My wife died of CA recently. I am also a surgeon. For the last 16 years, ending in 1976, I was Assistant Clinical Professor of Oral Surgery at New York University, Bellevue Medical Center. I am also a businessman. My business address is P. L. Box 391, Flemington, New Jersey; and our company was founded approximately 13 years ago by myself. I am familiar with the daily operations of Bass as a motor common carrier and as a motor contract carrier as to the services offered to our customers. One-half our volume is with the chemical industry.

Bass presently operates in interstate or foreign commerce and, in New Jersey, intrastate commerce. Our company has eight terminals in New Jersey. We employ eighty-one persons in New Jersey operations and our annual sales from the New Jersey operations, alone, are approximately \$4 million. We have paid \$52,000 in taxes to the State of New Jersey and our capital investment over the past 13 years has been close to \$2 million. We expect our capital investment in New Jersey in the next ten years to total about \$5 million.

Bass has been transporting the products covered by S 3035. More specifically, it has carried the products made from vinyl chloride for the past thirteen years. Our experience in the handling of resins, sheeting, floor tile and many other products made from plastic resins has been without apparent impact on the health and welfare of Bass employees and our fellow citizens. For example, during '76, we handled over 225 million pounds of plastic resin and products made from plastic resins. These shipments were transported and handled in equipment federally approved for the proper and adequate handling of these products.

I would like to skip to the next section. Several years ago when the first notice was published by OSHA regarding vinyl chloride and its impact on employees or persons handling this product, we at our own expense had all of our employees examined to comply with OSHA requirements for detection of any serious diseases resulting from the handling of these products. Our examinations of our employees resulted in no known cases of illnesses due to the handling of vinyl chloride. We presently conduct courses which provide the proper and necessary instructions for our drivers and other personnel in the handling of these resins. At those plants where our customers have instructed us to wear masks or to stay away from certain areas, Bass drivers so conduct themselves as if they were, indeed, employees of that company when they enter that facility.

The enactment of the Cancer Control Act would have a devastating effect on the economic health of Bass Transportation and particularly on Hunterdon County and the small community of Flemington, New Jersey, from which we operate. The products proposed to be regulated, coupled with other implied restraints in the transportation of these products under Senate 3035, represent up to 65 percent of our business. The passage of this bill plus its regulatory and economic possibilities would essentially put Bass out of business. The loss of jobs - and Bass has the third largest sales volume in our county - would drastically affect the economic health of our community. In addition, the many suppliers and ancillary flow of business to them generated by our company would come to a standstill.

The physical health of our citizens is shared by all of us as our primary responsibility. This has been achieved under existing controls. New research

should be encouraged to learn more about the products we manufacture and utilize as citizens. But we feel certain the physical health of the community will survive without it being drawn into excess regulatory legislation such as the Cancer Control Act.

As a consumer, in addition to being a businessman, my position is as follows: The products manufactured through the discovery of plastic years ago has led to a better life for me, my fellow workers, and I am certain, for the rest of the citizens of the State and the United States. Industry's expertise in creating and making available these many products for consumers has been the primary factor for New Jersey's economic success, and I know that plastics played a very important role in that process. Take away their manufacturing possibilities for these new processes or straddle them with such regulation, then our financial health will not survive. We will only have bleak and dark days ahead.

Thank you very much for giving me the opportunity today to speak to you.

(Written statement submitted by Dr. Selesnick can be found beginning on page 105X.)

SENATOR AMMOND: Thank you, Doctor.

Mr. de Matteo.

A D O L P H E J. D E M A T T E O: My name is Adolphe deMatteo and I am from the Thielelex Plastics Corporation in Piscataway, New Jersey. Parenthetically, I have cancer of the thyroid arising out of exposure to deep x-ray therapy in the treatment of tuberculosis 35 years ago. I am still alive and enjoying every minute of it.

In appearing before you today, I am making a plea on behalf of those 140 or so small business enterprises that have been referred to earlier who process polyvinyl chloride and plastics in general.

Small business is like the weather. Everybody talks about it, but nobody does anything about it. Small business does not have the resources to mount the effort needed to affect legislation. When I come down here to appear before you, my company loses a third of its executive staff and its entire engineering and technical staff. But we feel strongly about this legislation, S 3035, because it means our survival as a viable business enterprise and the attendant welfare of our employees. We think it warrants this kind of sacrifice.

I won't read to you all about vinyl, except to say that we are well aware of the fact that long-term exposure to vinyl chloride monomer may result in angiosarcoma of the liver. The interesting thing is that the last three rats to die who outlived the other 47 had angiosarcoma. So it takes a long time and you may outlive everybody else if you live in a vinyl chloride atmosphere. But there are two conditions that are necessary: long-term exposure and high levels.

The federal government imposed very stringent regulations in 1975. Prior to their imposition, we monitored our employees and we came up with no vinyl chloride monomer. We know it is there.

After the imposition of the regulations, we again monitored our employees and again found no vinyl chloride monomer. That doesn't mean that it isn't there. But in the chase for absolute zero, you can spend a lot of time and effort and you probably won't find anything. We were using equipment that was good down to five hundredths of a part per million. The actual level for the federal government is

half a part per million. So we know we couldn't find anything.

The other thing that has happened as a result of the federal efforts has been that the vinyl resin producers, themselves, have made a great effort to scrub their product. Where a few years ago, 100 to 1,000 parts per million of residual monomer was common, today, you rarely see more than 10, and 1 part per million is routine.

We do have the problem of vinyl chloride monomer under control. We don't believe that vinyl chloride monomer represents any kind of a hazard to our employees or to the general public for that matter.

We don't believe that the proposed S 3035 legislation can make the smallest contribution to the prevention of cancer among our employees or to people in the State of New Jersey. I say this because the problem is being very strongly attacked on all levels by so many federal agencies and by state agencies. In a small manufacturing business such as ours, you must recognize that we are subject to all kinds of regulations. It has now reached the point for me where I simply give up. I can't cope with OSHA, FDA, EPA, TOSCA - you know, on and on and on. You just do the best you can and hope you don't go to jail.

All of these people in these agencies are very, very eager to do their jobs and to justify their multimillion-dollar budget. They have at least the virtue that their standards and their efforts are applied uniformly, whether they be in New Jersey or in South Carolina. Now, if we already have all of this federal activity, why is it necessary for the State to step in, preempting what is already underway and duplicating an existing bureaucracy? If federal authorities have already studied a problem and made regulations that are designed to protect the worker and the public, what possible good can come from the State of New Jersey imposing more stringent regulations or absolute prohibitions?

I submit that we have here in S 3035 a bill that cannot ban cancer, that cannot reduce the risk of cancer and can only create an overlapping and duplicating bureaucracy and place the New Jersey worker at a competitive disadvantage to the rest of the nation with no useful end result. Thank you.

(Written statement submitted by Mr. de Matteo can be found beginning on page 110X.)

SENATOR AMMOND: Thank you, sir. Your testimony was eloquent.

I think that is the end of the day and we will adjourn now. Thank you all for testifying and taking time out to let us know your feelings on this matter.

(Hearing Concluded)

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TESTIMONY OF NEW JERSEY
ACTING COMMISSIONER OF ENVIRONMENTAL PROTECTION
ROCCO D. RICCI
ON THE INDUSTRIAL WASTE PRETREATMENT PROGRAM
BEFORE THE
U. S. SENATE COMMITTEE ON PUBLIC WORKS AND ENVIRONMENT
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
Washington, D. C.

June 23, 1977

Mr. Chairman, distinguished members of this Subcommittee. New Jersey strongly supports the development of effective industrial pretreatment requirements to control the discharge of toxic pollutants into municipal sewerage systems. A strong program is needed to protect public health, water quality and the aquatic ecosystem. To be effective the program should involve the meaningful participation of federal, state and local governments, sewerage authorities and other interested parties.

A stated goal of the Federal Water Pollution Control Act Amendments of 1972 is "that the discharge of toxic pollutants in toxic amounts be prohibited." That goal is not being met. The Act sets forth requirements for the setting of toxic effluent limitations and industrial pretreatment standards as mechanisms for achieving that objective. Unfortunately, until recently little has been accomplished by the U. S. Environmental Protection Agency (and the responsible state and local agencies) in carrying out this important mandate.

During the five years since the passage of P.L. 92-500 and even before 1972, the primary emphasis of the federal and state water pollution control programs (and the air programs as well) has been on the conventional pollutants. The reduction of Biological Oxygen Demand (BOD) has been the main thrust of untold person-hours of work and money, including the \$18 billion federal construction grant program. While this is important in protecting both public health and aquatic species, the water pollution control program generally has ignored the more insidious poisons which are discharged into our waterways in smaller quantities.

The presence of toxic substances in our waters is not just a water quality issue but is an issue intimately related to the health of our citizens. EPA has reported the presence of carcinogens in the public water supply systems of several major United States cities. The need to eliminate these toxic substances in the water is especially critical in industrialized states like New Jersey where the available water resources are intensively utilized.

In New Jersey water is used and reused for water supply. Water discharged through municipal systems upstream often is used after treatment as drinking water downstream. In northern New Jersey, 100 mgd (million gallons per day) of the 765 mgd total potable surface water supply is withdrawn below sewage treatment plant discharge points. Effective pretreatment should remove toxic materials at the source of discharge and eliminate the more costly treatment at the water supply filtration plant. Industrial pretreatment is environmentally superior to treatment at the point of intake for public use in that the toxics are more concentrated at the point of discharge and are easier to remove than at the filtration plant. Further, the industrial discharger knows exactly which substances are in his effluent and can use appropriate technology to eliminate the toxic discharge. The water supply plant is often at a distinct disadvantage in: (1) not knowing precisely which chemicals of the thousands of possibilities are in the water, and (2) not being financially and technically capable of testing and controlling the broad spectrum of possible chemical contaminants.

Public water supplies in some areas are threatened by chemicals from land disposal sites leaching into ground water supplies. This problem also is best controlled at the point of discharge. While an industrial pretreatment program generally would not directly control these water pollution sources, under the Federal Resource Conservation and Recovery Act, EPA and the states should take appropriate steps to eliminate these major sources of toxic pollutants in the ground waters. Pretreatment facilities will generate sludges and liquid waste with high toxic concentrations, and these concentrated wastes also must be handled in an environmentally satisfactory manner.

In New Jersey, as part of Governor Byrne's comprehensive State effort to control cancer-causing agents in the environment, the Department of Environmental Protection (DEP) has linked its industrial pretreatment program with its cancer control program. We anticipate that by working together the DEP can more effectively control the carcinogens discharged into the State's waterways. A similar effort undertaken by EPA together with the National Cancer Institute could prove valuable to the national effort to eliminate toxics from our waters.

In my judgment, an effective industrial pretreatment program is the keystone to a comprehensive national effort to eliminate the discharge of toxic substances into our surface and ground waters.

Effective water pollution control can best be achieved by the meaningful participation of federal, state and local governments, sewerage authorities and other interested

parties. The complexity of the pretreatment program especially requires the best use of fiscal and manpower resources at all levels of government.

Some municipal treatment systems include hundreds of industrial dischargers. In New Jersey there are over 2,000 industries which discharge into just one municipal system. There are approximately 12,000 which discharge into municipal systems while some 900 industries discharge directly into New Jersey streams. The problem does not lend itself to easy answers.

In my judgment, the federal EPA should establish a pretreatment program which parallels the concept of the direct discharge control program. National pretreatment limitations should be developed on the basis of pretreatment technology (as effluent limitations are developed on the basis of technology) with the possibility that these limitations could be more stringent where the attainment of water quality standards requires more stringent controls (as in the case of water quality based effluent limitations). In developing and implementing this type of pretreatment program the water pollution control community should benefit from its experience in working with the direct discharge control program.

Basic to this approach is the need for EPA to immediately start on a serious effort to help states develop water quality standards for heavy metals and other toxics. While the setting of water quality standards is and should remain a state function, EPA should commit the necessary financial and technical resources: (1) to develop the complex scientific and technical information and data needed to establish water quality criteria and standards, and (2) to support states in their efforts to establish and effectively implement water quality standards for heavy metals and other toxics. This process should parallel the development of national pretreatment limitations and both should proceed as quickly as possible.

Once limitations and standards are established, local sewerage authorities will be directly responsible for developing and implementing pretreatment programs. As EPA has proposed, section 201 monies could be used to develop pretreatment programs and to build needed monitoring facilities. Additionally, EPA should provide the necessary fiscal and technical support for the feasibility studies to promote the development of regional facilities to properly treat and dispose of the accumulated chemical sludges and liquid industrial wastes which will be generated by pretreatment facilities.

As I mentioned earlier, effective pretreatment will result in the accumulation of sludges with high concentrations of heavy metals and other toxic substances. We must achieve environmentally proper disposal of these sludges as well as

the removal of the toxics from industrial discharges. In many instances the disposal of these pretreatment sludges can best be handled at regional facilities which could accept the sludges from several individual municipal systems. These regional systems could benefit from the economies of scale needed to treat these sludges in an environmentally sound manner. EPA and the states should consider the feasibility of regional disposal facilities for other concentrated industrial wastes and sludges in addition to those which will be generated by pretreatment. Vast quantities of industrial wastes currently are being dumped into landfills (or illegally into streams, onto open land or into manholes). Inevitably much of these wastes contaminate the land and waters they reach. The problem goes beyond state boundaries and EPA should provide the national leadership to provide these badly needed facilities.

The states have an important role in pretreatment standard setting, monitoring and enforcement. Analogous to the situation for more common pollutants, the states should establish water quality standards for toxic materials, and water quality based pretreatment limitations. These limitations should include total allowable mass for given pollutants when the attainment of water quality standards requires such higher degrees of pretreatment. The primary impact of industrial pollutants on streams and lakes and the aquatic environment is a function of the level of concentration of those pollutants in a particular body of water. A more subtle but equally significant effect is due to pollutants which are deposited in bottom sediments and are allowed to re-enter the aquatic food chain. The Hudson River with its concentrations of PCB's is an example of such effects. Although it is difficult to accurately predict the deposition rates of pollutants in sediments, pretreatment standards should carefully consider the impact of contaminants on the the total aquatic environment. We believe that when the pretreatment level necessary to meet water quality standards exceeds the technology-based requirements, the level of pretreatment should be upgraded.

The states should provide assistance to local sewerage agencies in developing and implementing their pretreatment and monitoring programs. Further, the states should be involved in the enforcement of pretreatment limitations.

Local sewerage agencies play an important role in our efforts to effectively remove these environmentally dangerous substances. They are on the front line with major responsibilities including the performance of industrial waste surveys and the development, implementation and enforcement of necessary pretreatment ordinances.

The industrial waste survey should tell the local authority what substances are being discharged by industries into the municipal system. Using that information the agency can develop a pretreatment ordinance to limit the toxic substances entering the system. This ordinance should reflect the types of waste going into the system, imposition of national pretreatment requirements, and recognition of the needs of small industries.

New Jersey's water pollution control efforts have been aimed at existing water quality problems - primarily in our urban and coastal areas. The thrust of the pretreatment program is fundamental to restoring our urban areas. The hundreds of small businesses in our urban areas are vital to the renewal of our cities and we must recognize their needs while continuing to improve water quality and eliminate toxics from our waterways.

Operating sewerage agencies should implement innovative waste management programs which could include their participation (in the absence of private initiatives) in the installation and operation of separate waste treatment units at the municipal plant sites to handle the industrial waste and sludges which may be generated by the smaller industries within their system. The authority might decide that several (or many) small industries in a given area could discharge by repiping into holding tanks. These materials could then be transported by tank truck to central disposal facilities. Such an approach would give small businesses the advantage of economies of scale enjoyed by large industry. The municipal agencies will have to invest perhaps substantial funds to explore the feasibility of innovative approaches to pretreatment and small industries. We recommend that the federal monies be made available for this purpose. However, these central facilities should be built with local funds, with operation and maintenance of these installations funded through a system of user charges.

Local sewerage agencies will bear significant responsibility for monitoring compliance and enforcement of their pretreatment program. Toward this end it is necessary that the local agencies install the appropriate monitoring equipment and have available the necessary analytical facilities. We recommend that federal funds be provided for these purposes. Effective enforcement also requires self-monitoring by industry, analogous to the direct discharge self-monitoring program.

Local pretreatment programs should not permit the discharge of toxics or heavy metals into the system based on their removal at the municipal plant. This practice, even if the plant were successful in removing the materials, would tend to concentrate them in the municipal sludges and

interfere with good sludge management practices such as composting. New Jersey believes composting to be a relatively low-cost, environmentally sound method of disposing of sewage sludge. However, the presence of high quantities of heavy metals and toxics presents special problems with regard to the ultimate use of composted sludge.

An effective industrial pretreatment program is critical to stopping toxic substances from entering our water supplies and the food chain and in protecting public health, water quality and the aquatic ecosystem.

Investments we make over the next several years in removing toxics from the direct and indirect discharges will benefit this generation and the generations to come.

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IMMEDIATE MECHANISMS
FOR
CANCER CONTROL
IN
NEW JERSEY

by

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The following document contains simplifications for ease of understanding. As in most aspects of human disease, there are exceptions, and alternate opinions. The following attempts to condense the contemporary, responsible thoughts on the different aspects of cancer.

Introduction

I wish to thank the Senate for allowing me to present these analyses that were made while I was the Director of the Cancer Institute of New Jersey. The views are not original and were shaped with the help of many colleagues here in New Jersey, as well as in New York, the National Cancer Institute, the American Cancer Society, and other Cancer Centers. These views have a direct bearing on the proposed legislation and involve lives, jobs and profits (in order of importance) in New Jersey.

My interest lies in offering data that may be helpful for directing the limited but unique resources that any single state has, toward saving the most lives, in the quickest time possible, with the least amount of taxpayer money. There is a reasonable concern that if a "scapegoat" is pursued, then the real culprit will remain unchecked with the resultant loss of more lives.

There are immediate mechanisms to help control cancer in New Jersey and they need not involve the prospects of economic contraction or dislocation. They require the use of current scientific knowledge regarding the causes and control of the most common cancer killers (lung, gastro-intestinal tract, breast, and uterus), in coordinated, rational approaches, employing existing resources.

I. ELEMENTS OF THE CANCER PROBLEM IN NEW JERSEY

New Jersey, largely through Senator Skevin's Commission and other concerned groups within and outside of government, has taken a leadership role in the war against cancer, prompted to some extent by the high New Jersey cancer mortality rates published in a study by the National Cancer Institute (N.C.I.). Legislation, at different levels of development, includes:

- o a bill to ban carcinogens and empower a Cancer Control Council "... to protect the environment and health of our people..."
- o a bill to develop a statewide Tumor Registry
- o a bill to stimulate the creation of Early Cancer Detection programs
- o funding mechanisms possibly through increased tax levys on cigarettes
- o initial thoughts and discussions to "...ban 'junk foods' in the public schools..."

A major assumption has been that since New Jersey has the highest cancer mortality rates compared to any other state, from 1950-1969, and because the chemical industry is concentrated in New Jersey, that these two factors must be causally related. A causal relationship would indicate that cancer control efforts should be directed at the chemical industry. However, scientific scrutiny of the NCI's mortality data does not support this assumption, and the authors of the original NCI report did not structure the study to provide definitive conclusions.

Examination of New Jersey's high cancer mortality statistics indicates that the mortality rates:

- o do not have the well defined pattern that is expected as a result of chemical pollutants, i.e., high rates of cancer of the lungs, larynx, stomach, bladder, skin, marrow/lymph and liver; instead, almost all forms of cancer were above the average for the rest of the nation, except cancer of cervix and leukemias/lymphomas which were below, or at the national average.
- o do show some inexplicable, negative correlations between chemical pollutants and the expected cancer, e.g., New Jersey supposedly leads other states in the nation with benzene as an air pollutant; this chemical, in high concentrations, can cause leukemias and lymphomas; yet, according to the NCI mortality study, the leukemias/lymphomas category was one of the few wherein New Jersey did not show any elevation above the U.S. national average

Investigations and analyses since the NCI's U.S. Cancer Mortality by County: 1950-1969 have shown serious fallacies in attempts to draw conclusions from this particular study. One explanation, that has received support from cancer experts, for New Jersey's high cancer mortality rates from 1950-1969 follows:

- o it is well established that cancers take 20-30 years to develop in humans and therefore the people who died of cancer in New Jersey between 1950-1969 started to develop their cancers in the 1920's through the 1940's.
- o when people relocate, they carry their already initiated cancers with them. This has been proven by many epidemiologic studies, including a major one that demonstrated that immigrants to Israel from Western Europe and the U.S.A., developed cancers at the high rates seen in their former homelands, rather than the extraordinarily low rates seen among the native born Jews and Arabs
- o the timing of the NCI mortality study unfortunately coincided with the post-war suburban expansion and New Jersey received an influx from New York City and Philadelphia
- o if New York City and Philadelphia are used as controls for comparison, although they are not states, they are demographically similar, their cancer mortality rates are higher than rates for New Jersey.
- o if controlled comparisons of New Jersey mortality statistics are made with other geographic sites in the U.S.A., taking into account the fact that New Jersey has the most urbanized population, then New Jersey emerges as having lower cancer mortalities than most other urbanized centers (the data is in regard to mortalities for white males, which is the principal data that has brought New Jersey the title of "Cancer Alley")

Philadelphia	221/100,000
St. Louis City, Missouri	220/100,000
New York City	215/100,000
Nassau County	212/100,000
(an Eastern suburb of N. Y. City)	
San Francisco	206/100,000
Chicago	206/100,000
New Jersey	205/100,000
Westchester County	200/100,000
(a Northern suburb of N. Y. City)	
U.S A.'s Nationwide	174/100,000

- o most responsible cancer epidemiologists believe that the causal factors that led to the higher cancer mortality rates in urbanized centers between 1950-1969 had to do with the innumerable complexities of urban life which include the more likely acquisition of unhealthy habits, life-style, and nutrition rather than the classical, industrial chemical pollutants; for the period of time that the cancers were being initiated (in the 1920's and 1940's, with death occurring in the 1950's and 1960's), the non-urbanized population was far less likely to follow the habits, life styles, and nutrition of the urban centers
- o most of the urbanized areas with higher death rates than New Jersey have little or no chemical industry, e.g., New York City, Nassau County and San Francisco
- o recent studies suggest that pollutants in the Elizabeth area are not obviously predisposing the community to undue cancer risks. Studies by Jeanne Ratti, Project Director of the Cancer Control Network (composed of three hospitals, Morristown Memorial, Overlook, and Elizabeth General), show that Elizabeth General has fewer cases of lung and bladder cancer, in proportion to their annual cancer incidence figures, than either Morristown Memorial or Overlook; this is contrary to what is expected in view of the heavy industrial concentration in Elizabeth, and moreso because major industrial concerns like Exxon refer cancer cases among their employees to Elizabeth General and its associated clinics; these three hospitals are community-based and Morristown Memorial is far removed from industrial pollutants. (Elizabeth General does handle an estimated 50% of the cancer load in the Elizabeth area).

II. CHEMICAL INDUCTION OF CANCER

The development of cancer is complex, and even in a laboratory setting where most of the variables can be controlled, there are many seemingly small factors that spell the difference between the development of a cancer or not. Among the variables in animal experiments are the following

- o the strain of animals used; a strain is a more genetically refined group than a species or subspecies, e.g., a strain of white/gray horses that is genetically predisposed to developing malignancies is used in research; in general, cancer researchers use strains that have a high predisposition to develop certain types of cancers spontaneously, without the intercession of any chemicals; this will give the researchers a higher yield and in a shorter period of time
- o the type of fat or oil that the chemical carcinogen is dissolved in for feeding or for injection (most are soluble only in fats or oils and not all in water) is a major factor; if the fats are polyunsaturated, the yield of cancers is generally higher.
- o the solution of the chemical carcinogen in the fat or oil solvent may sometimes have to be "aged" for just the right period, or no tumors will develop
- o the age of the laboratory animal; sometimes a chemical is a carcinogen only when the laboratory animal has been exposed as an embryo or fetus
- o the dosage employed is a major variable; in low doses many chemicals are not carcinogenic; yet when the higher carcinogenic doses are used, the amount of the chemical, in and of itself, causes major dysfunctions in vital organs, e.g., the liver is the prime organ for detoxifying exogenous chemicals and it can easily be overloaded, hence, when very large doses are used, as in the Canadian saccharin study, the function of the liver is in question and other chemicals in the animal's diet may not be detoxified.
- o the coexistence of certain micro-organisms may influence the efficiency of the chemical as a carcinogen, e.g., in the use of rodents for urinary bladder carcinogenesis, as in the Canadian saccharin studies, no attempt was made to control for the presence of certain micro-organisms in the genito-urinary tract of these animals; these micro-organisms can in and of themselves, without chemicals, lead to the development of urinary bladder cancers
- o the use of co-factors along with the suspect chemical; the co-factors are generally not carcinogenic by themselves, but they might enhance the ability of the chemical to cause a cancer

- o the development of a "tumor nodule" in an animal's tissues is not always a malignancy; the term "tumor" is sometimes misleading and many tumor nodules, especially in the liver, can go away since they are not malignant; a qualified pathologist, working with the chemical carcinogenesis researchers must examine preparations of the "tumors" under the microscope to certify them as true malignancies; not every "bump" or "lump", which is the definition of the word "tumor" is a malignant growth
- o Cancers may fail to develop in some strains because they are "resistant"; this means that their cells simply are not so easily reprogrammed from "normal" to "cancer", and/or there are many complex immunologic defense factors at work involving different types of antibodies, and different types of white blood cells called lymphocytes (of which there are two main types, T-cells and B-cells); the genetic aspects of the animal's immune defense mechanisms is therefore an additional major factor in the development of a malignancy.

III. THE SCREENING OF CHEMICALS FOR CARCINOGENIC PROPERTIES

There are thousands of chemicals that people are exposed to as workers and/or as consumers, and the number of chemicals increases every year in response to consumer demands, government requirements, and chemical ingenuity. Considering the number of experimental variables, only a fraction of which were described in the preceding section, and considering the number of chemicals that need to be tested, the task of accurately assessing the danger of a particular chemical seems impossible. For these reasons a number of approaches are being recommended, particularly the "Ames test".

Dr. Bruce Ames of Berkeley, California has found that if the chemical in question is mixed with a freshly ground up rat's liver, allowed to sit for a while, and then portions of this mixture are added to bacteria growing in the laboratory, that he can determine whether that chemical might be carcinogenic in mammals. He looks to see whether the bacteria have undergone mutations or not.

This test is a good "screening" test, but for obvious reasons can not be used to take definitive actions. Chemical carcinogenesis experts such as Dr. Benjamin Van Duuren of NYU's Institute of Environmental Medicine have proposed a distinct place for the "Ames test" in a multi-step approach to assessing a chemical's carcinogenicity. The following is excerpted from Dr. Van Duuren's contribution to the proceedings of a symposium sponsored by the National Academy of Sciences to define carcinogenesis:

"Step 1 is an examination of chemical structure and reactivity. For potential indirect-acting carcinogens their metabolism and possible activated carcinogenic intermediates must also be examined.

Step 2 would involve short-term evaluation, including mutagenicity studies in several bacterial systems and in vitro transformation in mammalian cell culture. For the latter test, several parameters should be included, such as morphological alterations, growth in soft agar, and intracellular biochemical changes.

Step 3 is most important. Long-term exposure in laboratory animals, preferably in two species. For this to be done, it is probably not necessary to wait for studies on the relevant route of exposure which is frequently inhalation and therefore a much lengthier procedure. The simpler, less expensive, and more rapid in vivo bioassays in my opinion justify the red light I mentioned above if the results are positive. However, where inhalation and/or ingestion are involved, these experiments certainly should be carried out as soon as possible".

In scientific terms the genes of a bacteria, i.e., the DNA, are very different from the genes in mammalian cells, and damage with resultant mutation in bacterial DNA can not be scientifically equated with DNA changes in mammalian cells that lead to cancer. The differences between bacteria and mammalian cells include:

- o bacteria do not have a nucleus while mammalian cells do; bacterial DNA is in the general cytoplasm
- o bacterial DNA is bare and lacks the extensive protein coats that envelope mammalian DNA
- o replication of bacterial DNA proceeds at points where the DNA touches the cell's lipid-rich membrane; disturbances in the bacteria's membrane can seriously disturb the integrity and replication of the DNA; in mammalian cells, the DNA is generally protected against membrane disturbances by protein coats.
- o DNA in bacteria is a circular molecule, whereas in mammals the DNA is a simple long chain
- o DNA in mammalian cells has many sites for the same gene; this is "redundancy in the DNA" and is a safety or spare-parts mechanism; bacteria have little or no redundancy in their DNA
- o DNA repair mechanisms differ between bacteria and mammalian cells

IV. THE CANCER CONTROL COUNCIL OF S-3035

The question of the ability of the Cancer Control Council, as proposed in S-3035, to deal with the assessment of a chemical's carcinogenic properties, and thereby its use, is a serious one in view of the complexities described in the previous sections. Mistakes can be made in either direction; a chemical may be mistakenly called safe, whereas in fact it may be dangerous, or it may be termed unsafe. What is at issue is the nature of the scientific training and background of those who would be called upon to evaluate complex and sometimes conflicting scientific data, to determine the use or non-use of a particular substance. A timely situation is that of the FDA and saccharin. The FDA, citing the Delaney clause and the Canadian rodent studies, wants to ban saccharin because rats that were exposed to high doses while they were still fetuses, and where the high doses were continued after birth for the life of the animal developed more urinary bladder cancers than did the controls. Major cancer experts like Dr. Frank Rauscher (recent Director of the National Cancer Institute and now with the American Cancer Society), Dr. R. Lee Clark (President of the American Cancer Society, President of the Texas University Cancer System, and a member of the three man Panel on Cancer that serves the President of the United States), and Dr. Benjamin Van Duuren do not believe that saccharin should be banned. They feel that: 1) not enough controls were done, 2) an unrealistic dose was used that probably deranged the rodent's normal liver functions, and 3) the route of administration, starting in utero and continued life-long, was a "tortured" one with no comparable exposure of other chemicals by this same route.

The proposed Cancer Control Council would not be in a position to evaluate chemical carcinogenesis data; unless the members were themselves experts, specifically in chemical carcinogenesis. In the state of New Jersey there are a number of excellent cancer researchers such as Dr. Walter Schlesinger in virology at the Rutgers Medical School, Dr. Jack Frescoe in molecular biology at Princeton, Dr. Frederick Cohen in cancer chemotherapy at Beth Israel Hospital in Newark, Dr. Ames Phillipone in cancer surgery and clinical cancer control, among others, but there are no experts in chemical carcinogenesis in the state. This is unfortunate, but even the best universities, such as Rutgers and Princeton, can not have experts in all areas. It is a notable lack in New Jersey, and as the Director of the Cancer Institute of New Jersey, one of my top priorities was to recruit the best chemical carcinogenesis experts that existed and none were in this state.

A scientific paper that is published deals with a limited number of experiments that control only a few variables. Therefore, in any one paper, only limited conclusions can be reached, and when scientists continue in a field of work, they will sometimes refute their own, earlier work.

Hence, judgements that involve serious actions such as allowing a chemical to be used without restrictions, or banning it must be based on more than one paper. A body of work is generally necessary, and absolutely from more than one particular research group. The truth can always be reproduced, and science has always awaited the confirmation of a body of work by another group of scientists before accepting something as "truth".

V. IMMEDIATE CANCER CONTROL MECHANISMS

A state has certain prerogatives that have been established by the Constitution and by custom, that enable it to mount cancer control programs that have rapid and long-lasting effects and which are particularly cost-effective. These are programs in Early Cancer Detection and Education for Prevention of Cancer. State's can:

- o influence the activities of the hospitals that they license and inspect, and can thereby encourage the development of early cancer detection clinics for the hospital's community, especially if reimbursement for this activity is offered
- o have an effect on the public schools and other state supported educational institutions so as to augment cancer-prevention education, e.g., regarding smoking, avoidance of excessive alcohol, sound nutrition to minimize the dietary ingestion of excess fats or nitrate/nitrite containing meat products

In contrast, the federal agencies have little or no power to influence hospitals or schools within a state. On the other hand, the federal agencies are in a better position because of budgets, authorities, and established laboratories and personnel to deal with questions of chemicals in the work place and in the environment. Several studies have shown the inherent regional interstate nature of occupational and environmental health problems, e.g., ozone depletion can not be addressed by a single state's banning chlorofluorocarbons as a major North-western state has done; indeed, the U.S.A. has raised the question that protecting the ozone layer will require international efforts.

The federal agencies, including the NCI, FDA, EPA, OSHA, and others have agreed, under the urgings of the President and his staff, to collaborate more fully and use each others resources more often. This powerful, wellfunded armamentarium is well equipped to handle the question of chemicals, their general toxicity, as well as their carcinogenicity. In addition to their own resources, they award grants and contracts to non-governmental institutions and can thereby encourage the development of confirmatory studies, among other things, when indicated.

The state of New Jersey has more limited resources, but like any other state it does have unique powers. There are two pieces of legislation involving

- o a statewide tumor registry
- o an early cancer detection program

that are on the right track, and it might be better to appropriate more money to those two programs rather than spreading it among three projects (S-3035 being the third), especially since the substance of S-3035 is extremely complex and is already taken care of on a more scientific basis by the federal government.

VI. EARLY DETECTION

Early cancer detection has an immediate effect on the "Prospective Cancer Mortality Rates". It should be understood that the term "Cancer Mortality Rate" refers to those patients who will die from cancer this year, or have died from cancer in any previous year; these people had their cancers diagnosed from 1-7 years before their demise. Whenever a cancer is newly diagnosed, it is evaluated so as to allow for prognosis, i.e., what will happen to the patient. Hence, with every group of newly diagnosed cancer cases there is a "Prospective Mortality Rate", i.e., how will these people do? Early detection of several, common cancer killers can affect the "Prospective Mortality Rates" in the current year. For example, if breast cancers are diagnosed when they are 1cm in diameter, or less, then the Prospective Mortality Rate is only 10% or less. This means that only 10% of the patients with this size breast cancer will ever die from this disease. If the breast cancers are 2cms in diameter when first diagnosed, the Prospective Mortality Rate climbs to 40%, and when 3cms or more the Prospective Mortality Rate is 70%. Most breast cancers are currently detected when they are about 2cms and the Prospective Mortality Rate is about 40%.

Breast cancers can be detected early, at 1cm, without the use of routine mammography in the overwhelming majority of women. Expert palpation, by specifically trained paramedics, can be performed in a matter of 8-10 minutes, at a cost of approximately \$6. In return for this early detection effort, lives are saved as well as substantial amounts of health care dollars and social service dollars. If a breast cancer is detected at 1cm, rather than 2cm

- o the extent of the surgery may be reduced
- o convalescence and rehabilitation will consequently be shorter
- o hospital days will decrease, so thirdparty payers have a smaller bill
- o readmissions for recurrences and metastases will be unlikely
- o expensive courses of repetitive chemotherapy and radiotherapy will probably not be needed
- o social service dollars will not be expended to provide for household helpers to aid the patient afflicted with spreading metastases
- o social service dollars will not be expended in the care of dependent children left by the deceased mother

In addition to breast cancer, cancer of the colon/rectum, and cancer of the uterus are controllable by inexpensive screening tests (the test for occult, i.e., hidden blood in the stools, and the Pap tests, respectively). Similar savings of lives, health dollars and social service dollars can be made, with immediate results. There is no reason, except for a modicum of funds and

and organization, why the Prospective Mortality Rates from these three cancer sites (breast, colon/rectum, uterus) can not be immediately decreased. The state's hospitals can do the job, provided they are given funds by the Department of Health. Rutgers has active paramedical training programs that only need to have early cancer detection methods added, and the American Cancer Society is ready to add its own resources to such efforts. There is no need to develop any hierarchy or bureaucracy for such a program. Several of the excellent hospitals in New Jersey are ready to implement Early Cancer Detection Clinics but require some state aid for implementation. In general, these programs are geared to become self-sufficient after initial "start-up" funds are provided.

VII. PREVENTIVE EDUCATION

More than 60% of human cancer deaths are attributable, either singly or in combination, to

- o cigarettes
- o alcohol
- o dietary fat and fibre
- o nitrites/nitrates

Less than 4% are due to industry-related factors, and fewer than 1% are caused by industrial agents alone. Preventive education regarding cigarettes, alcohol, diet, and nitrites/nitrates can eventually prevent 60% of cancer mortality, but concerted state programs must be instituted. These should be long-lasting in their effects, and when coupled with Early Cancer Detection programs, can lead to substantial amelioration of the Cancer Problem.

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As you know from testimony at previous hearings, makes economic sense, too./ The costs related to cancer are massive.

In addition to eliminating the ban provisions in S. 3035, we urge the following changes:

The Cancer Control Council should not be mandated to approve or disapprove the Departments of Environmental Protection and Health rules and regulations. The Council should advise and recommend.

Section 4, line 2, change "approval" to advice.

" 5, line 1, change "approve" to advice.

" 8, line 2, change "Approve or disprove of" to Recommend changes to

It is essential that the ~~four~~ citizens on the Council be bona fide representatives of public interest and labor organizations.

Sec. 7.a., line 6, after "State" insert from recognized public interest and labor organizations

lines 6-7, delete "representing the general public"

line 9, after "from the" insert ~~four~~ ¹¹ citizens

lines 9-10, delete "members representing the general public"

The Council should report its findings and recommendations to the public as well as to the departments and the Legislature:

Sec. 8.c, line 13, after "report its" insert findings and

line 14, after "commissioners" add a comma and delete "and"; after "Legislature" add and the public.

The provision for Statewide programs of cancer control education and information distribution should include workers exposed to carcinogens, as well as the general public.

Sec. 9.b, line 12, after "control," add to workers exposed to carcinogens and citizens at large;

The specified \$3,000 penalty for violating the Act's provisions should be increased to at least \$10,000.

Sec. 10, line 9, change "\$3,000" to \$10,000.

In the event of a violation, citizens should have the right to bring suit if either DEP or DOH fails to act within a reasonable time.

Add a new paragraph under Section 10: Citizens shall have the right to bring suit if either of the concerned departments fail to act within a reasonable time.

Again, we believe authorizing the Departments of Environmental Protection and Health to condition and control the release and use of carcinogens is fully warranted by existing information and represents prudent public policy and action. We urge prompt passage of S. 3035. Thank you.

TABLE I

1974 Z16.1 injury rates, reporters to N.S.C.

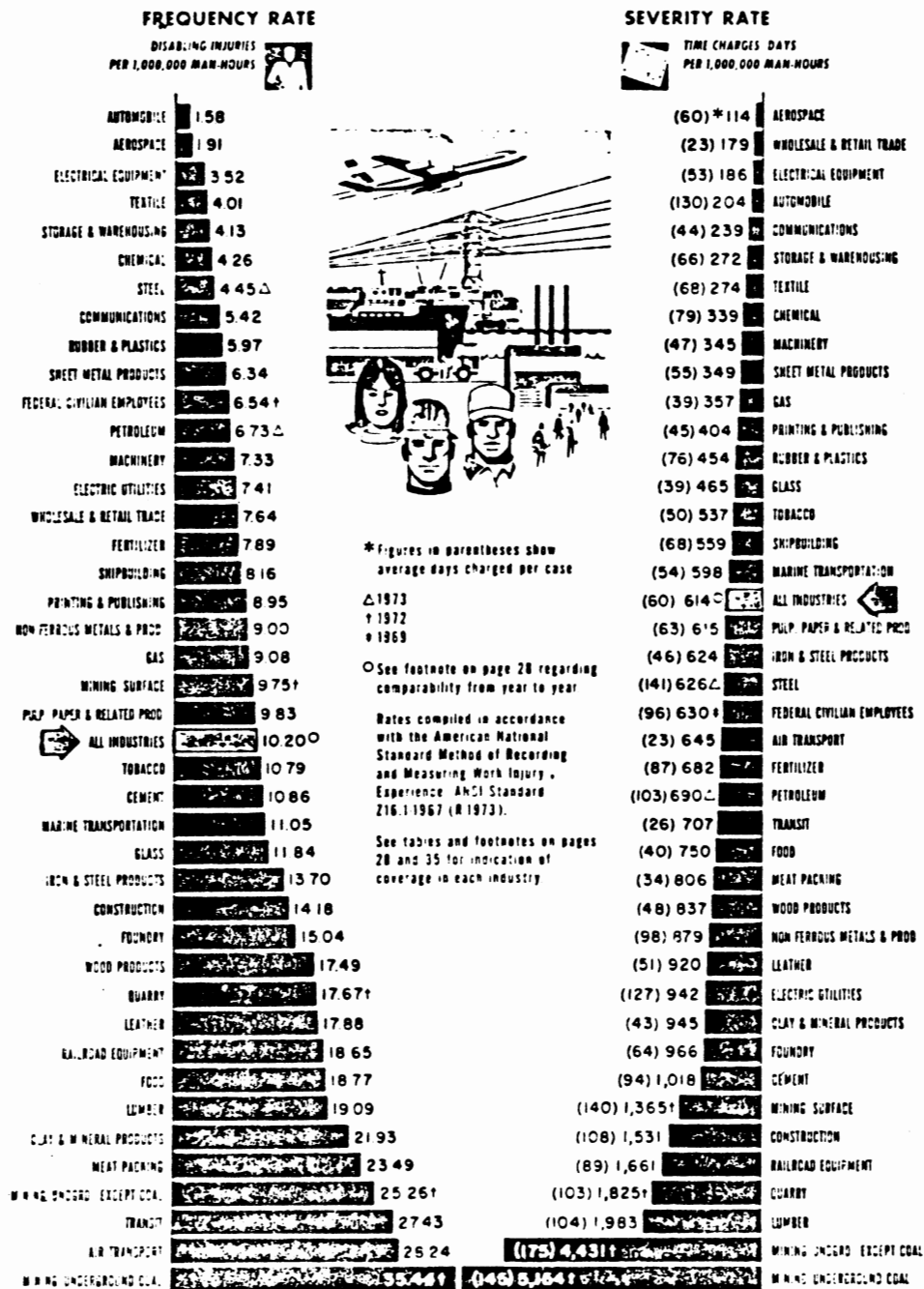


TABLE 11

Table 6. — Observed and Expected Deaths, by Job Category and Age at Entry to Study, 1954 - 1972.

Job Category	Age at Entry to Study, March 1954					
	All Ages		Under 45		45+	
	Observed	Expected	Observed	Expected	Observed	Expected
Total	1089	1346.1	81	383	76	706
Professional/Management	39	58.3	67	13	19.9	65
Professional/Technical	64	113.8	56	27	55.8	48
Business	26	43.5	60	11	20.1	55
Supervisory (manufacturing)	36	63.2	57	4	21.4	†
Clerical	88	83.6	105*	37	36.9	100
Construction	119	153.4	78	40	53.2	75
Organic chemical production (finishing)	63	73.6	86	21	29.9	70
Organic chemical production (manufacturing)	155	168.1	92	70	69.3	101
Inorganic chemical production	57	87.4	65*	21	28.9	73
Laboratory employees (nonprofessional)	22	29.6	74	14	21.6	65
Janitors, laborers	71	94.3	75	5	12.8	39
Plant mechanics, machinists, machine repair	76	75.8	100	22	26.3	84
Welders, leadburners	37	37.7	98	12	16.7	72
Other maintenance (boilermakers, pipefitters, cell maintenance, etc.)	52	67.9	76	18	24.8	73
Misc. nonchemical production	184	195.8	94	68	72.0	94

* Significant at the .05 level after adjusting for socioeconomic effect.

† Fewer than five observed deaths.

Table 7. — Observed and Expected Deaths by Cause and Job Category, 1954 - 1972.

Job Category	All Causes		Malignant Neoplasms		Cardiovascular Disease		All Other Causes	
	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.
Total	1089	1346.1	81	256	259.2	99	611	718.8
Professional/Management	39	58.1	67	4	11.5	†	23	31.8
Professional/Technical	64	113.8	56	14	22.0	69	39	59.3
Business	26	43.5	60	9	8.4	107	16	22.9
Supervisory (manufacturing)	36	63.2	57	9	12.6	71	20	34.0
Clerical	88	83.6	105*	17	15.8	108	51	43.6
Construction	119	153.4	78	22	29.4	75	70	82.2
Organic chemical production (finishing)	63	73.6	86	19	14.0	136	33	38.5
Organic chemical production (manufacturing)	155	168.1	92	39	32.4	120	80	88.8
Inorganic chemical production	57	87.4	65*	7	17.0	41‡	37	47.2
Laboratory employees (nonprofessional)	22	29.6	74	3	5.3	†	14	13.9
Janitors, laborers	71	94.3	75	21	18.0	117	40	54.4
Plant mechanics, machinists, machine repair	76	75.8	100	28	14.6	192‡	33	41.1
Welders, leadburners	37	37.7	98	12	7.4	162	15	19.8
Other maintenance (boilermakers, pipefitters, cell maintenance, etc.)	52	67.9	77	16	13.1	122	30	36.1
Misc. nonchemical production	184	195.8	94	36	37.8	95	110	105.1

* Significant at the .05 level after adjusting for socioeconomic effect.

† Fewer than five observed deaths.

‡ Significant at the .01 level after adjusting for socioeconomic effect.

From the Dow Chemical Company, Midland, Mich. Dr. Ottis Biostatistician, Corporate Medical Department; Dr. Holzer is a staff member of the Michigan Division Medical Dept., Dr. Langner is Director of Industrial Hygiene Laboratories.

Reprint requests to Corporate Medical Dept., 2030 Dow Center, Midland, MI 48640.

TABLE III

1974

	Total U. S.	Total Northeast Region*	Total New Jersey
Cancer Mortality	360,472	95,730	13,985
Rate per 100,000	170.5	193.7	190.8

New Jersey's rank in U. S. 10

New Jersey's rank in Northeast 6

* Connecticut	New York
Maine	Pennsylvania
Massachusetts	Rhode Island
New Hampshire	Vermont
New Jersey	

Source: Vital Statistics Report
 U. S. Dept. Health, Education, & Welfare
 Public Health Service
 Health Resources Administration

Statement by C. A. Hansen
Senate Energy and Environment Committee
June 24, 1977

APPENDIX A

S3035 for the most part duplicates existing laws both at the State and Federal levels. Duplications at the State level are as follows:

1. Section 4 of S3035 requires the Department of Environmental Protection to formulate rules and regulations regarding release of carcinogens, and regarding production, manufacture, sale and labeling of products containing carcinogens. The State Department of Environmental Protection has authority now under Sec. 26:2C-8, Title 26, NJSA to control all air pollutants not just carcinogens. This and the very broad definition of air pollution contained in Sec. 26:2C-2 of the existing laws should be adequate authority. That definition states:

" 'Air pollution' as used in this act shall mean the presence in the outdoor atmosphere of one or more air contaminants in such quantities and duration as are, or tend to be, injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property throughout the State and in such territories of the State as shall be affected thereby and excludes all aspects of employer-employee relationship as to health and safety hazards."

2. Section 5 requires the Commissioner of Health to regulate or prohibit use of products containing carcinogens which cause or may tend to cause adverse effects. We believe the present health statutes provide this under NJSA Sec. 26:1A-7,

Title 26. That law states:

"The State Sanitary Code may cover any subject affecting public health, or the preservation and improvement of public health and the prevention of disease in the state of New Jersey, including the immunization against disease of all school children in the state of New Jersey. In addition thereto, and not in limitation thereof, said State Sanitary Code may contain sanitary regulations: (a) prohibiting nuisances hazardous to public health: (b) prohibiting pollution of any water supply;..."

3. There is precedent for regulation of air pollution in the interest of the public health and welfare by even a local board of health in Board of Health of Weehawken Tp., Hudson County v. New York Central R. Co., 4 N.J. 293, 72 A. 2d 511 (1950).

4. Section 6 mandates a total ban on 16 substances. A total ban is not realistic action and will be devastating to the State's chemical and other industries with tens of thousands of people suffering job losses in the short run, hundreds of thousands in the long run. A part of the Department of Environmental Protection, already has flexible authority to require for new and modified sources the most advanced control technology available without fixed numerical limits.

5. Section 7 creates a Cancer Control Council in the Department of Environmental Protection composed of Commissioners of Environmental Protection, Health and Labor and Industry plus four citizens appointed by the Governor. Chairman and Vice Chairman to be selected from the citizen members. The qualification of the four citizens are not defined.

6. Section 8 empowers the Council to:

a. Approve or disapprove rules promulgated

under Section 4 or 5. That is, the list of chemicals can be expanded without legislative action.

- b. Study State programs and make recommendations to the legislation.
- c. Hold annual public hearings on cancer control statues, rules, programs, etc.
- d. Recommend best use of available funds for cancer research.

7. Sections 7 and 8 effectively give a super agency dominated by public members veto power over actions of the Department of Environmental Protection and Department of Health. This same veto power may be rationalized to extend to employee health regulations promulgated by the Department of Labor and Industry. There are no criteria for selction of the citizen members to assure their qualifications or to assure a board representative of the various interests in the State. These sections, in effect, give control of major State agencies to a small group of non-elected persons, who are not responsible for the legislature or the executive and who serve fixed terms. This is inconsistent with good governmental structure and practice.

8. Furthermore, considering possible make-up and the authority of this council, this could lead to arbitrary additions to the list of banned materials under Section 6. Vesting such broad powers in a "citizens group" smacks of the legislature and executive branches shirking their responsibilities.

9. Section 9 grants certain powers to the Department of Environmental Protection and Deparment of Health ranging from conducting research to receiving and investigating complaints regarding violations of laws regulating carcinogens. This

section is very close to a restatement of Sec. 26:2C-9, Title 26 substituting the specific term of "air pollution". Existing law authorizes everything this proposes.

Federal vs. State Responsibility

1. Regulations concerning chemicals having to do with protection of both plant workers and the general public should be at the federal level. Attempts to accomplish this at the State level has in the past resulted in competition for industrial investment based on leniency of regulation. This is not to the best interest of New Jersey of the public in general. The federal government now has adequate legislation for this purpose such as:

The Clear Air Act, Clean Water Act, FDA,
OSHA, and the Federal Toxic Substances
Act.

The latter legislation was supported by the Chemical Industry. It provides additional strict testing and control of the manufacture and distribution of suspected and known dangerous substances. In addition, it provides regulations guaranteeing the safety of new compounds before they can be marketed. There are large technical and administrative staffs already existing to exercise these controls.

2. There are provisions in the Federal Toxic Substances Act (PL 94-469, Oct. 11, 1976) that provide the state some power to command the forces of the EPA. Section 4(f) (copy attached) requires that the EPA, after receiving any information which,

"indicates that there may be a reasonable
basis to conclude that a chemical substance

or mixture presents or will present a significant risk of serious or widespread harm to human beings from cancer, gene mutations, or birth defects, the Administrator shall....initiate appropriate action under Section 5, 6, or 7 (attached) to prevent or reduce to a sufficient extent such risk or publish in the Federal Register a finding that such risk is not unreasonable."

This section becomes effective on January 1, 1979. It not only refers to new data indicating a carcinogenic potential but also would include findings that a previously known carcinogen was being emitted in excessive amounts presenting a significant risk to health.

Even if the risk is localized, the EPA has the authority now to impose controls in that specific geographic location (see Section 6(a) attached).

(ii) No person, while serving as a member of the committee, or designee of such member, may own any stocks or bonds, or have any pecuniary interest, of substantial value in any person engaged in the manufacture, processing, or distribution in commerce of any chemical substance or mixture subject to any requirement of this Act or of any rule promulgated or order issued thereunder.

(iii) The Administrator, acting through attorneys of the Environmental Protection Agency, or the Attorney General may bring an action in the appropriate district court of the United States to restrain any violation of this subparagraph.

(D) The Administrator shall provide the committee such administrative support services as may be necessary to enable the committee to carry out its function under this subsection.

(f) REQUIRED ACTIONS.—Upon the receipt of—

(1) any test data required to be submitted under this Act, or

(2) any other information available to the Administrator,

which indicates to the Administrator that there may be a reasonable basis to conclude that a chemical substance or mixture presents or will present a significant risk of serious or widespread harm to human beings from cancer, gene mutations, or birth defects, the Administrator shall, within the 180-day period beginning on the date of the receipt of such data or information, initiate appropriate action under section 5, 6, or 7 to prevent or reduce to a sufficient extent such risk or publish in the Federal Register a finding that such risk is not unreasonable. For good cause shown the Administrator may extend such period for an additional period of not more than 90 days. The Administrator shall publish in the Federal Register notice of any such extension and the reasons therefor. A finding by the Administrator that a risk is not unreasonable shall be considered agency action for purposes of judicial review under chapter 7 of title 5, United States Code. This subsection shall not take effect until two years after the effective date of this Act.

(g) PETITION FOR STANDARDS FOR THE DEVELOPMENT OF TEST DATA.—

A person intending to manufacture or process a chemical substance for which notice is required under section 5(a) and who is not required under a rule under subsection (a) to conduct tests and submit data on such substance may petition the Administrator to prescribe standards for the development of test data for such substance. The Administrator shall by order either grant or deny any such petition within 60 days of its receipt. If the petition is granted, the Administrator shall prescribe such standards for such substance within 75 days of the date the petition is granted. If the petition is denied, the Administrator shall publish, subject to section 14, in the Federal Register the reasons for such denial.

SEC. 5. MANUFACTURING AND PROCESSING NOTICES.

(a) IN GENERAL.—(1) Except as provided in subsection (h), no person may—

(A) manufacture a new chemical substance on or after the 30th day after the date on which the Administrator first publishes the list required by section 8(b), or

(B) manufacture or process any chemical substance for a use which the Administrator has determined, in accordance with paragraph (2), is a significant new use,

unless such person submits to the Administrator, at least 90 days before such manufacture or processing, a notice, in accordance with subsection (d), of such person's intention to manufacture or process such substance and such person complies with any applicable requirement of subsection (b).

Publication in
Federal Register.

5 USC 701.

Infra.

Publication in
Federal Register.
Post, p. 2034.

15 USC 2604.

(5) The Administrator may, upon application, make the requirements of subsections (a) and (b) inapplicable with respect to the manufacturing or processing of any chemical substance (A) which exists temporarily as a result of a chemical reaction in the manufacturing or processing of a mixture or another chemical substance, and (B) to which there is no, and will not be, human or environmental exposure.

Publication in
Federal Register.
Comments.

(6) Immediately upon receipt of an application under paragraph (1) or (5) the Administrator shall publish in the Federal Register notice of the receipt of such application. The Administrator shall give interested persons an opportunity to comment upon any such application and shall, within 45 days of its receipt, either approve or deny the application. The Administrator shall publish in the Federal Register notice of the approval or denial of such an application.

Publication in
Federal Register.

(i) DEFINITION.—For purposes of this section, the terms “manufacture” and “process” mean manufacturing or processing for commercial purposes.

SEC. 6. REGULATION OF HAZARDOUS CHEMICAL SUBSTANCES AND MIXTURES.

15 USC 2605.

(a) SCORE OF REGULATION.—If the Administrator finds that there is a reasonable basis to conclude that the manufacture, processing, distribution in commerce, use, or disposal of a chemical substance or mixture, or that any combination of such activities, presents or will present an unreasonable risk of injury to health or the environment, the Administrator shall by rule apply one or more of the following requirements to such substance or mixture to the extent necessary to protect adequately against such risk using the least burdensome requirements:

(1) A requirement (A) prohibiting the manufacturing, processing, or distribution in commerce of such substance or mixture, or (B) limiting the amount of such substance or mixture which may be manufactured, processed, or distributed in commerce.

(2) A requirement—

(A) prohibiting the manufacture, processing, or distribution in commerce of such substance or mixture for (i) a particular use or (ii) a particular use in a concentration in excess of a level specified by the Administrator in the rule imposing the requirement, or

(B) limiting the amount of such substance or mixture which may be manufactured, processed, or distributed in commerce for (i) a particular use or (ii) a particular use in a concentration in excess of a level specified by the Administrator in the rule imposing the requirement.

(3) A requirement that such substance or mixture or any article containing such substance or mixture be marked with or accompanied by clear and adequate warnings and instructions with respect to its use, distribution in commerce, or disposal or with respect to any combination of such activities. The form and content of such warnings and instructions shall be prescribed by the Administrator.

(4) A requirement that manufacturers and processors of such substance or mixture make and retain records of the processes used to manufacture or process such substance or mixture and monitor or conduct tests which are reasonable and necessary to assure compliance with the requirements of any rule applicable under this subsection.

(5) A requirement prohibiting or otherwise regulating any manner or method of commercial use of such substance or mixture.

(6) (A) A requirement prohibiting or otherwise regulating any manner or method of disposal of such substance or mixture, or of any article containing such substance or mixture, by its manufacturer or processor or by any other person who uses, or disposes of, it for commercial purposes.

(B) A requirement under subparagraph (A) may not require any person to take any action which would be in violation of any law or requirement of, or in effect for, a State or political subdivision, and shall require each person subject to it to notify each State and political subdivision in which a required disposal may occur of such disposal.

(7) A requirement directing manufacturers or processors of such substance or mixture (A) to give notice of such unreasonable risk of injury to distributors in commerce of such substance or mixture and, to the extent reasonably ascertainable, to other persons in possession of such substance or mixture or exposed to such substance or mixture, (B) to give public notice of such risk of injury, and (C) to replace or repurchase such substance or mixture as elected by the person to which the requirement is directed.

Any requirement (or combination of requirements) imposed under this subsection may be limited in application to specified geographic areas.

(b) **QUALITY CONTROL.**—If the Administrator has a reasonable basis to conclude that a particular manufacturer or processor is manufacturing or processing a chemical substance or mixture in a manner which unintentionally causes the chemical substance or mixture to present or which will cause it to present an unreasonable risk of injury to health or the environment—

(1) the Administrator may by order require such manufacturer or processor to submit a description of the relevant quality control procedures followed in the manufacturing or processing of such chemical substance or mixture; and

(2) if the Administrator determines—

(A) that such quality control procedures are inadequate to prevent the chemical substance or mixture from presenting such risk of injury, the Administrator may order the manufacturer or processor to revise such quality control procedures to the extent necessary to remedy such inadequacy; or

(B) that the use of such quality control procedures has resulted in the distribution in commerce of chemical substances or mixtures which present an unreasonable risk of injury to health or the environment, the Administrator may order the manufacturer or processor to (i) give notice of such risk to processors or distributors in commerce of any such substance or mixture, or to both, and, to the extent reasonably ascertainable, to any other person in possession of or exposed to any such substance, (ii) to give public notice of such risk, and (iii) to provide such replacement or repurchase of any such substance or mixture as is necessary to adequately protect health or the environment.

A determination under subparagraph (A) or (B) of paragraph (2) shall be made on the record after opportunity for hearing in accordance with section 554 of title 5, United States Code. Any manufacturer

Hearing.

Chemical Marketing Reporter

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Acrylo Under 'Serious Suspicion' as Carcinogen; DuPont Findings Puzzle Some at Monsanto

E. I. duPont de Nemours & Co. said last week that "serious" suspicion has been raised that acrylonitrile, a chemical intermediate, may cause cancer in man. In a letter to governmental agencies concerned with worker and product safety, Dr. Bruce W. Karrh, duPont's medical director, said in part: "Preliminary results of an epidemiological study of workers assigned to a polymerization operation with potential for exposure to acrylonitrile at a textile fibers plant in Camden, S.C., indicate excess cancer incidence and cancer mortality, as compared with company and national experience. The

study includes about 470 males who began working in the polymerization area at the plant between 1950 and 1955 and who are still actively employed by or have retired from the company.

This time period allows for a twenty-year latency for induction of cancer. A more complete analysis yet to be made will also include persons who left the company."

Data reported earlier this year by the Manufacturing Chemists Association on tests with laboratory animals led to a decision by duPont to reduce worker exposure to acrylonitrile to below a "time-weighted" average of 2 parts per million. The present threshold limit value established by Federal regulation is 20 parts per million.

EMPLOYEES NOTIFIED

In addition to the governmental agencies, duPont has notified its employees, customers and other producers.

Acrylonitrile is manufactured by duPont at plants in Beaumont, Tex., and Memphis, Tenn., and is sold outside the company and used internally. The largest use with duPont is in the manufacture of acrylic fiber at the Camden plant, at a Waynesboro, Va., plant and at three foreign sites.

Analyses of duPont acrylic fiber have shown that the amount of acrylonitrile remaining in the fiber after manufacture is so minute that it does not constitute a risk to personnel in textile processing operations or to consumers using the fiber end-products.

In addition to acrylic fibers, the principal uses for acrylonitrile are in synthetic rubber and plastics.

The company says that by analyzing data through 1975 which allows for a 20-year latency period, it found that sixteen cancer cases (living and dead) occurred

among active employees as compared with an expected number of 5.8 based on company rates or 6.9 based on national rates. These cases included six lung cancers (1.5 expected), three colon cancers (.5 expected), and one cancer each of seven primary sites; these differences in cases observed versus expected are statistically significant.

All cases of cancer occurred in the group having initial exposure during the startup of the plant in 1950-1952. Although the period since initial exposure is not as long as for the group first exposed in 1950-1952, the company found no cases of cancer in employees first exposed in the 1953-1955 period. This latter group includes about 25 percent of the total study group.

Mortality data for active employees and pensioners of the same group showed eight cancer deaths as compared with 4.0 expected based on company rates and 5.1 expected based on national statistics. These differences are also statistically significant. Four deaths from lung cancer were found (1.5 expected), and, again, all other deaths were distributed with one each for several different primary sites.

"We do not consider this study to provide definitive evidence of the carcinogenicity of acrylonitrile in man, since the findings are preliminary and, as indicated earlier, the status of persons who left our employ has not yet been determined," Dr. Karrh wrote.

ACTIONS TAKEN

"However, these findings, when considered together with the results of the animal tests which were reported previously, raise a serious suspicion that it may be a human carcinogen, and we are taking the following courses of action:

"1. Exhaustive analysis of the data to ensure that as much information as possible is derived.

"2. Further studies of the workers at the Camden Plant - in particular, follow up on the 484 exposed workers who left our employ.

"3. Assignment of priority to the identification and investigation of workers exposed to acrylonitrile in other plants, so that the findings of this study may be assessed in different populations.

"4. Continue our existing programs to reduce worker exposure to acrylonitrile to below a time-weighted average of 2 ppm from the present 20 ppm threshold limit value. Excursions of up to 10 ppm may be allowed for not longer than fifteen minutes.

"We are also advising our employees, customers, other producers, OSHA, NIOSH, and other Federal and state agencies of these findings."

Reacting to reports of the du Pont findings, a Monsanto spokesman said, "We're puzzled by it. Overall, there is an increase in cancers in start-up workers in the Camden, S.C. plant. But there are questions about interpretation."

For example, he said, the earlier exposure levels are unknown. Also in the case of vinyl chloride monomer, he said, there was one type of cancer - angiosarcoma attacking the livers of production workers. The du Pont report shows cancers attacking various sites of the body, he says; "it's a less clear-cut kind of case," he adds.

He says the company has been conducting a "very limited set of epidemiological studies but that their results have no statistical significance. In addition, he reports, Monsanto has been taking steps to reduce worker exposure to acrylo since the MCA animal studies were reported.

A spokesman for American Cyanamid, another producer, said his company also has a program to reduce worker exposure to acrylo. He said an epidemiological study is under consideration but might not be carried out because "we don't know what more could be added" to the du Pont epidemiological studies. At Cyanamid, he said, "there is not much of a question" that acrylonitrile is carcinogenic.

STATEMENT OF
DONALD H. SCOTT, PRESIDENT
NEW JERSEY STATE CHAMBER OF COMMERCE

to the
SENATE COMMITTEE ON ENERGY AND ENVIRONMENT
on

SENATE BILL NO. 3035

Senate Chamber, State House
Trenton, New Jersey
June 24, 1977

-- *** --

Mr. Chairman, and Members of the Committee:

My name is Donald H. Scott, President, New Jersey
State Chamber of Commerce.

We appreciate this opportunity to present our views
on Senate Bill No. 3035, the "Cancer Control Act", a measure
which we strongly oppose.

Our views concerning the economic impact of the bill
on jobs and job-creating investment in New Jersey, are in the
February 18, 1977 public hearing record of the Senate Commission
on the Incidence of Cancer in New Jersey. Therefore, in the
interests of brevity, and recognizing that three members of
that Senate Commission are also members of this Committee,
we will not repeat that statement.

For the record of this hearing, however, we are
submitting a copy of our February 18 statement and the related
documents, including "A Rational View of Cancer in New Jersey",

which was prepared by Dr. Harry B. Demopoulos, Associate Professor of Pathology, New York University Medical Center, and former Director of the Cancer Institute of New Jersey. This document is written in laymen's terms, and we highly recommend it as "must reading" to anyone who is concerned with, or who seeks a better understanding of, the cancer situation in New Jersey.

Dr. Demopoulos' paper makes some observations which I should like to call to your attention:

-- The term "environmental causes of cancer" has been talked about and written about a great deal throughout New Jersey, and no doubt, has been misused. We are fearful that our citizens interpret the term to mean "industry-created causes of cancer". Dr. Demopoulos defines it as follows, and I quote from page 2 of his paper:

"Environmental Cancer - refers to most cancers, possibly 80%; however, the term 'environment' is all-encompassing and relates mostly to the personal environment that results from life-styles, habits, and dietary factors; occupational exposures, and industry-related events comprise a minor component of 'environmental cancer'."

-- An analytic study conducted by Dr. Demopoulos revealed that no more than 4.3% of New Jersey's cancer deaths could be industry-related. Similar

results were revealed in a separate study conducted by Dr. Donald Louria, Chairman of the Department of Preventive Medicine and Community Health, New Jersey Medical School, C.M.D.N.J., and several associates.

-- While the National Cancer Institute mortality statistics (Atlas of Cancer Mortality) for the period 1950 to 1969 would seem to indict New Jersey as number one in cancer deaths among white males with a rate of 205/100,000, if we compare populations and ignore political boundaries, New Jersey's rates are equal to the rates of urban areas in other parts of the country (see page 7). For instance, New York City with a population about equal to New Jersey's, has a rate of 215/100,000; Philadelphia 221/100,000; Chicago 206/100,000; St. Louis 220/100,000.

-- The National Cancer Institute mortality study was not designed . . . to provide information for definite solutions. To employ this type of data for directing conclusive solutions is a frank misuse. The study was conducted to provide an overview of the scope of the cancer problem in the nation and nothing more.

-- Cancer causing agents generally take 20 to 25 years to produce a cancer -- evidently known as the "lag phase" in carcinogenesis. Therefore,

cancer deaths reported in the 1950 to 1969 period could reflect exposures in the 1920's, 1930's and 1940's.

-- Research is required to determine permissible exposure levels, as has been done with the most powerful carcinogenic agent, x-rays.

Causes and sources aside, it is evident that New Jersey and the nation have a major unresolved cancer problem and the questions which must be addressed are what is being done, and what should be done to deal with it -- not only in New Jersey, but the nation as a whole.

This, we believe, should be the approach: More sharply define the problem, get the facts, and use them for the benefit of people.

S-3035, in our opinion, would do nothing to contribute to a better understanding of the cancer problem, to the reduction of cancer, or to the alleviation of human suffering. We understand that Senator Skevin, the sponsor of S-3035, intends to offer amendments which would delete those provisions of the bill which seek to impose an absolute ban on the production, distribution, or use of 16 specific substances (Section 6), and which would permit the Commissioners of the Departments of Health and Environmental Protection, with the approval of the Cancer Control Council, to prohibit the release, or use, of carcinogens which cause, or may tend to cause, adverse effects on man or the environment (Sections 4 and 5).

It is our opinion that even if the bill were to be amended as indicated, it still would represent a measure contrary to the best interests of New Jersey's citizens. The basic concept of S-3035, in its present form with the total ban and prohibition provisions included, reflects a "zero-exposure" or "zero-emissions" control philosophy. This "zero-emissions" concept is included in the "Federal Water Pollution Control Act Amendments of 1972", as a national goal to be attained by 1985; but even in the short span between 1972 and today this concept largely has been discounted as being both impractical and unrealistic.

Although the unrealistic "zero-emission" provisions may be removed from S-3035, it still would remain highly objectionable in many other ways. The bill essentially would become a vehicle to encourage the establishment of threshold limits for carcinogens, and would turn the development of such complex regulations over to a control council consisting of seven individuals, none of whom would be required to have expertise in any of the myriad aspects of the cancer problem. The potential here for the misallocation of resources and for the unintentional thwarting of constructive efforts to abate this human malady would be limitless. The control council would be mandated to "do something", but as structured it appears that it could do very little to fashion a constructive approach to such a complex problem as cancer.

Furthermore, to include representatives from the regulatory agencies on such a control council, as proposed, and then to empower those regulatory agencies to conduct both

research and regulatory activities would obviously create a strong potential for conflict of interest.

We note that the Commissioners of Health and Environmental Protection, with the approval of the Cancer Control Council, would be required to adopt rules and regulations conditioning and controlling the release and use of carcinogens and products containing carcinogens which cause or "may tend to" cause adverse effects on man or the environment. Although this term "may tend to" already is incorporated in New Jersey's environmental control statutes, it creates a continuing source of dissension between industry and the Department of Environmental Protection (DEP) when a company is required to engineer specific hardware or processes to meet the latest "state of the art" in control techniques. "May tend to" is a nebulous term applied by the DEP without specific criteria, and to extend its application to such a critical area as cancer control would, in our opinion, unnecessarily exacerbate a structured adversary system.

Viewed in the context of existing Federal and New Jersey control statutes and regulations, we see no need for S-3035 or any similar new legislation. Such Federal statutes as the Toxic Substances Control Act, and the Occupational Safety and Health Act, and such New Jersey statutes as the Air Pollution Control Act and the Water Pollution Control Act, each of which includes provisions for the adoption of implementing regulations, would seem to obviate the need for yet another State control effort.

New Jersey has a reputation for excessively stringent environmental control laws and regulations, and it seems that representatives of both the Legislature and the DEP never tire of advertising this situation. We can assure you that such widely heralded statements are very carefully studied; that not only are the existing laws and regulations carefully evaluated, but also proposed laws and proposed regulations are given equal consideration by those who are responsible for investment decisions in the location or expansion of job-producing production facilities.

The deterrent effect of such proposals, when added to the existing family of excessively stringent environmental laws and regulations, is severe. Practically every such investment decision is kept "in-house", so to speak, and very little publicity given to them. However, on occasion the top of that iceberg of such decisions does appear, and the recent Dow Chemical experience in California illustrates what happens.

Regulatory road blocks and delay eventually led to Dow's decision in January to cancel plans for construction of a \$300 million petrochemical complex in California.

After more than two years and costs exceeding \$4 million for an environmentally sound project, the company hadn't even reached point one in the regulatory red tape maze.

When, at this point, Dow cancelled the project, it had obtained only four of the 65 permits it needed from various Federal, state, local and regional agencies involved in reviewing the proposed project.

To summarize our views on S-3035, we believe that, in either its present or proposed amended form, it is totally unnecessary and impractical. It would unquestionably contribute to existing confusion and misunderstanding. It would establish a high potential for conflict of interest, and would intrude yet another layer of governmental control into matters of health and safety where existing state and Federal agencies already have jurisdiction.

Moreover, a realistic appraisal of the control strategy which would remain in S-3035, were the bill to be amended as indicated above, would still not preclude an ingenious regulatory agency (and we have them in New Jersey) from effectively circumventing such amendments -- intentionally, or otherwise.

We wish to reiterate: we do not minimize the pressing need to better understand and to deal with cancer, but such a control scheme as envisioned in S-3035 would only dissipate our resources instead of marshalling them in a constructive manner to deal with the problem.

And we have some views on what we believe to be a constructive approach to the cancer problem in this State.

Bearing in mind the already-extensive research, investigative and control programs of both public and private organizations throughout the nation, and in many other countries as well, representing expenditures of billions of dollars and the efforts of thousands of people seeking solutions to cancer, we believe New Jersey's appropriate role in this picture should be that of determining just how this State's resources

could be best employed to supplement the sophisticated programs of other private and public organizations. This recommended course of action, in our opinion, would minimize duplication of effort, yet maximize the limited resources, comparatively speaking, which are available to New Jersey to address the cancer problem in this State.

It is imperative that we target our resources on plans that directly attack the problem.

Representative of such a direct approach are two of the Senate Cancer Commission's package of bills, S-1758 which would establish and maintain an up-to-date cancer registry, and S-3034 which would provide for the early detection and treatment of cancer. We have actively supported, and continue to press for the passage of these bills which, in our opinion, seem to offer the most direct route to getting the facts and to reducing human misery and loss of life in our State.

It seems truly tragic that we have in this State the knowledge and the capacity to achieve immediate and dramatic inroads against the scourge of cancer, which would mean a reduction of pain and suffering, and the preservation of human life; yet, the principal thrust of inquiry, thus far, seems to have been confined principally to a narrowly-focused concern with industry sources.

I would like to conclude with a quote from Melvin A. Benarde, Professor of Epidemiology at the Hahnemann Medical College and Hospital of Philadelphia, and Vice President of the Princeton Regional Health Commission, in an article

entitled "Cancer: Some Possible Causes", in the January 9th edition of the New York Times, which aptly sums up our view of S-3035:

"Rather than 'rush to judgment' with slap-dash legal schemes that are doomed to failure, and rather than jerry-rigged pollution control policies, New Jersey really needs what the authors of the Atlas hoped would be forthcoming -- epidemiologic investigations, both retrospective and prospective -- to establish on a firm basis the relationship between the demographic data and environmental, life style, and genetic variables."

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STATEMENT OF
DONALD H. SCOTT, PRESIDENT
NEW JERSEY STATE CHAMBER OF COMMERCE

to the
SENATE COMMISSION ON THE INCIDENCE OF CANCER
IN NEW JERSEY

Senate Chamber, State House
Trenton, New Jersey
February 18, 1977

Mr. Chairman, and Members of the Commission:

My name is Donald H. Scott, President, New Jersey State Chamber of Commerce.

Attached to this statement is a document entitled "A Rational View of Cancer in New Jersey", prepared by Dr. Harry B. Demopoulos, Associate Professor of Pathology, New York University Medical Center, and former Director of the Cancer Institute of New Jersey. Dr. Demopoulos is a noted chemical carcinogenesis professional and, as you might recall, testified before this Commission last November 5. This document is written in laymen's terms, and we highly recommend it as "must reading" to anyone who is concerned with, or who seeks a better understanding of, the cancer situation in New Jersey.

Dr. Demopoulos' paper makes some observations which I should like to call to your attention.

- The term "environmental causes of cancer" has been talked about and written about a great deal in recent months, and no doubt, has been misused. I am fearful that our citizens

interpret the term to mean "industry-created causes of cancer". Dr. Demopoulos defines it as follows, and I quote from page 2 of his paper:

"Environmental Cancer - refers to most cancers, possibly 80%; however, the term 'environment' is all-encompassing and relates mostly to the personal environment that results from life-styles, habits, and dietary factors; occupational exposures, and industry-related events comprise a minor component of 'environmental cancer'."

- An analytic study conducted by Dr. Demopoulos revealed that no more than 4.3% of New Jersey's cancer deaths could be industry-related. Similar results were revealed in a separate study conducted by Dr. Donald Louria, Chairman of the Department of Preventive Medicine and Community Health, New Jersey Medical School, C.M.D.N.J., and several associates.

- While the National Cancer Institute mortality statistics for the period 1950 to 1969 would seem to indict New Jersey as number one in cancer deaths among white males with a rate of 205/100,000, if we compare populations and ignore political boundaries, New Jersey's rates are equal to the rates of urban areas in other parts of the country (see page 7). For instance, New York City with a population about equal to New Jersey's has a rate of 215/100,000; Philadelphia 221/100,000; Chicago 206/100,000; St. Louis 220/100,000.

- The National Cancer Institute mortality study was not designed . . . to provide information for definite solutions.

To employ this type of data for directing conclusive solutions is a frank misuse. The study was conducted to provide an overview of the scope of the cancer problem in the nation and nothing more.

- Cancer causing agents generally take 20 to 25 years to produce a cancer -- evidently known as the "lag phase" in carcinogenesis. Therefore, cancer deaths reported in the 1950 to 1969 period could reflect exposures in the 1920's, 1930's and 1940's.

- Research is required to determine permissible exposure levels, as has been done with the most powerful carcinogenic agent, x-rays.

Causes and sources aside, it is evident that New Jersey and the nation have a major unresolved cancer problem and the questions which must be addressed are what is being done, and what should be done to deal with it -- not only in New Jersey, but the nation as a whole.

The New Jersey business community is prepared to support a realistic approach to getting the facts about cancer causes and acting on those facts to come up with solutions.

It is apparent, however, that there is a great deal of misinformation and a great lack of solid factual information upon which to base an outright ban on the production, manufacture, or use of certain substances as proposed in Senate Bill No. 3035.

While some of these esoteric sounding chemical names, as enumerated in the proposed legislation, would be largely meaningless to most people --

and almost impossible of pronunciation -- they are necessary ingredients in many useful and beneficial products, widely used in our everyday lives; products we would be hard-pressed to do without.

And, while the experts tell us that "industry-related" cancer deaths are a relatively small number compared to all cancer deaths, they indicate other causes responsible for the largest percentage of cancers.

Do you plan to ban cigarette smoking?

Do you plan to ban consumption of alcohol?

Will you dictate the eating habits of our citizens?

We are told that x-rays are the most powerful carcinogenic agent. It would be foolhardy to ban the use of this most beneficial health-care tool. Because research has delineated permissible exposure levels and it can be handled with adequate precautions, an otherwise dangerous agent is turned into a benefit for people.

This, then, ought to be the approach to other potential carcinogens. Get the facts, define the limits of use, and use them for the benefit of people.

The alleged carcinogens listed in section 6 of S-3035 have been identified and controlled as to allowable exposure by existing Federal standards. Therefore, we see no need for, or benefit from, this proposed legislation which, if enacted, would seriously dislocate our State's economy and adversely affect the well-being of our people.

It is, of course, difficult to measure the exact economic impact if S-3035 were enacted. We believe it would create economic chaos.

For illustration, let us take one company and one product: Johns-Manville Corporation and asbestos. S-3035 would shut down the company's facilities in Manville with an immediate loss of some 2,000 jobs and a payroll loss of about \$30 million; add to this the loss of taxes to the community and State, the reduction in purchases of services and materials needed in the manufacturing process, and the cost impact of 2,000 more unemployed people upon our unemployment fund and welfare programs.

Because asbestos has many uses, principally as an insulation material, it is found in many commodities such as brake lining of automobiles, thermal insulation on the maze of pipes and conduits in industrial complexes and utility electric generation stations. In the home it is used for insulation on boilers, steam pipes, electric ranges, fluorescent lights, electric irons, etc.

An effective enforcement program of the total ban would preclude the use of asbestos in the brake lining of automobiles which are assembled in this State, an industry which employs roughly 12,000 people in New Jersey.

Would automobile and truck drivers be banned from using their vehicles with asbestos brake linings?

Would it require the shutdown of those industries and utility generation stations which use asbestos for insulation, until a replacement material could be secured and installed?

The Pharmaceutical Manufacturers Association has asked us to file for the record a short statement representing their views on S-3035.

I will not read the statement in full, but I would like to read a few of the highlights:

"One of the most important functions of the pharmaceutical industry is the conduct of research and product development aimed at finding new and more effective medicines. In the State of New Jersey, the leading pharmaceutical firms invest more than \$340 million annually in their research and development programs.

"Virtually all of the compounds specified in S-3035 are used in the course of pharmaceutical research and development. Indeed, the U. S. Food and Drug Administration (FDA) and Environmental Protection Agency (EPA) require that several of them be used as standard controls in laboratory research on cancer."

One of the great ironies of this bill is that in the process of trying to protect people from cancer, it would interrupt research which is seeking a cure for it.

"We do not believe those who favor S-3035 really want to dictate that specific compounds cannot be used in medical research, whether in industrial or academic laboratories, without any regard for the implication of such arbitrary action. However, in banning the production, distribution, or use of certain compounds thought to be carcinogenic, this bill would place pharmaceutical research and development in the State of New Jersey in serious jeopardy.

"Many of the named compounds are essential to the

manufacture of prescription medicines as well. For example, one compound (methyl chloromethyl ether) is necessary in the production of a new life-saving antibiotic soon to be made available to the medical profession. The methyl chloromethyl ether is completely destroyed during the process of synthesis. When it is being used, all production methods and safeguards are closely supervised and are conducted in accordance with Federal regulations."

The pharmaceutical industry employs over 50,000 people in New Jersey, and about 1/3 of these employees are directly involved in research and development.

In fact, New Jersey leads all states in pharmaceutical research.

The industry has an annual payroll of \$825 million, pays \$47 million a year in taxes, invests millions of dollars each year in our State -- and is one of our few manufacturing industries which is growing in terms of employment and payroll.

And to quote again from their statement: "S-3035 would surely diminish very substantially the incentive for pharmaceutical companies to remain in the State and increase its investments here."

Aside from the economy and the jobs involved, what is basic is that we not squander our resources on a plan that does not attack the problem.

We should not do violence to the economy -- for a healthy economy is needed to support a program that is needed to attack the problem; a

program of getting at the real facts which can lead to targeting solutions, a program of early-detection of cancer when chances of cure are so much greater, and a program of education aimed at the total population.

We therefore, would support legislation which would establish an up-to-date cancer registry -- to get the facts.

We will support legislation which would establish an early detection program; a program which we believe provides the best opportunity to lessen human misery and to save lives.

But let us not make the mistake of weakening our economy by mandating an over-simplified approach to a pressing public health problem -- thereby lessening the availability of resources needed to make important gains in our fight against cancer.

A RATIONAL VIEW OF CANCER IN NEW JERSEY

by

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The following document contains simplifications for ease of understanding. As in most aspects of human disease, there are exceptions, and alternate opinions. The following attempts to condense the contemporary, responsible thoughts on the different aspects of cancer.

This Analysis was prepared while Dr. Demopoulos was Director of the Cancer Institute of New Jersey

S U M M A R Y

A RATIONAL VIEW OF CANCER IN NEW JERSEY

This summary outlines the essential points that are explained in the attached documents.

I. Definitions

- o A major distinction is made between mortality and incidence rates. Mortality rates simply represent statistics reported from death certificates and provide insufficient data for any solutions; incidence rates are the numbers of new cases/year and relate to living patients. The status of New Jersey as "the number one cancer state" is based on mortality rates.
- o The difference between industrial and environmental cancer is stressed. Industrial exposures in the "work place" cause a minor number of cancers, and there is an even smaller number attributable to industrial carcinogens that "have escaped into the community" (less than 0.00001% of cancer deaths). Environmental cancer refers to cancers induced by an individual's personal environment which includes cigarette smoking, excess alcohol consumption, ingestion of high fat/low fibre diets, use of nitrate/nitrite containing meats, consumption of foods with artificial colors, and other aspects of life-style; the occupational aspects of the environment are important, but relatively less important.

II. How Cancers Start

- o Normal cells have repair mechanisms to undo the damage caused by chemical and physical agents. However, these repair systems can be overloaded.
- o Cancer-causing agents generally take 20-25 years to produce a cancer. The example of the Hiroshima and Nagasaki survivors is given. This 20-25 year period is known as the "lag phase" in carcinogenesis.
- o Many substances can act together, either in an additive way or synergistically (the sum total of the effect is greater than just additive).

III. The Causes of Human Cancers

- o Specific cancers have been linked with definite agents, but the major lethal cancers, lung and large bowel, are linked to personal habits. Only a small percent of cancers are industry-related.
- o Nitrites/nitrates and artificial colors are cancer causing chemicals (nitrites/nitrates are converted into dangerous nitrosamines when preserved meats are heated), but specific human cancers have not yet been linked to these substances.
- o Life-styles that include obesity, and multiple pregnancies, are associated with a greater risk for cancers of the breast and uterus, respectively.
- o The most dangerous human carcinogens are cigarettes, alcohol, dietary fats, nitrites/nitrates, and artificial food colors. These are the most widely distributed in the communities, and are proven to be responsible for the largest percentage of cancers, estimated as high as 80% (by Dr. Frank Rauscher, the recent Director of the National Cancer Institute, and Dr. Theodore Cooper, the recent Assistant Secretary for Health in HEW).

IV. Specific Problems in New Jersey

- o There is a complex array of medical, social, geological and geographic factors that must enter into any analyses and solutions for New Jersey's cancer problems, e.g., the dense urban population in N.J., inadequate educational and medical leadership in the past, etc. The sensitive area of "the quality of medical care in New Jersey" may explain a portion of the high cancer mortality rates during the period covered by the mortality study.
- o New Jersey's unfortunate prominence as the "number one cancer state" is based solely on mortality data from 1950-1969 and does not consider the mobility and shifts in populations from New York City and Philadelphia. These two cities, as well as other non-industrialized urban areas, have death rates as high as those of New Jersey. The density of the urban population of New Jersey confounds any analyses of the data available.

V. New Jersey Industry and Cancer

- o New Jersey had a 17% greater death rate, for white males, and a 14% greater death rate, for white females, compared to the rest of the country. This is the basis of New Jersey's infamy.
- o Other urban centers, even with light industry, share New Jersey's death rates, e.g., New York City, its Northern Westchester suburb, its Eastern Nassau suburb, and San Francisco. The state of New Jersey, when compared to other states, ranks number one. If, however, only populations are compared and state boundaries are ignored, then New Jersey's rates are equal to the rates of urban areas in other parts of the country. The problem lies however in the fact that even the rural areas of New Jersey have "urban rates"; this is the heart of the problem and requires further study. The answer may be as simple as the fact that many New Jersey rural dwellers, who died in 1950-1969, may have been city inhabitants from New York and Philadelphia at some time in the past and carried their damaged cells with them when they moved.
- o The types of cancers that are typically "industry-related" do not account for New Jersey's excess 2,000 cancer deaths each year. All types of cancer deaths are increased, and in some cases there is a negative correlation (benzene causes lymphomas and leukemias, and benzene is a prominent industrial pollutant - yet, the mortality rates from lymphomas and leukemias are not above the national average).
- o Separate studies by Drs. Louria and Demopoulos have suggested that only 600 of the 14,000 deaths in New Jersey might be "industry-related".

VI. The List of Carcinogens in S-3035, Section 6

- o The list includes a mix of substances; some are no longer in use, some are not carcinogens, some are strong and others are weak carcinogens. Apparently, at the present time, all are being handled with adequate precautions.
- o Asbestos and vinyl chloride are weak carcinogens.
- o Research is required to determine permissible exposure levels as has been done with the most powerful carcinogenic agent, x-rays.

A RATIONAL VIEW OF CANCER IN NEW JERSEY

New Jersey has unfortunately achieved infamy because statistics from a National Cancer Institute study reveals that New Jersey had the highest mortality rate, per 100,000 general population, in America in the period 1950-1969. This means one of two things: a) if you developed cancer and lived in New Jersey at that time, you were more likely to die of it because your cancer has been detected at a more advanced stage than in other states, and/or the complicated treatment that was needed was not as available as in other parts of the country; b) the risk of developing a lethal form of cancer was greater in New Jersey than in other states. It is not possible to determine which of these two reasons, or what combination is the truth because reliable incidence data does not exist throughout New Jersey. The data that is available is mortality data, which only shows how many people die each year from cancer. The mortality data, although very inadequate, has triggered massive controversies regarding:

- o industry-related cancer
- o environmental cancer
- o the personal environment
- o life-styles and cancer
- o inadequate health resources
- o toxic substances
- o dietary factors
- o banning of so-called carcinogens
- o politics
- o early detection
- o financial aspects of cancer
- o possible solutions

Cancer is the most complicated disease process, compared to the other major killers such as heart disease, strokes and accidents. There are over a hundred different forms of cancer, and they start in different organs of the body, in different types of individuals, and under poorly understood circumstances. No other disease process is so intricately interwoven with the very fabric of society; as though to emphasize their perplexing, intricate nature, cancer cells remain very similar to the patient's normal cells, thereby frustrating most attempts to "weed" them out.

In order to put cancer into perspective, so that possible solutions can be evaluated, the major complex aspects must be understood.

1. DEFINITIONS

Cancer - a malignant growth, composed of solid masses of disorganized cells that are ever-growing, and are capable of spreading to organs far from the original site, e.g., breast cancer starts as a lump, and some of its component cells will microscopically invade the blood stream which will carry them to the lungs, bones, liver, and brain.

Metastasis - the term used to refer to the spread of cancer cells from its site of origin, to other organs.

Early Detection - the process of detecting the cancerous mass while it is still small and therefore less likely to have metastasized.

Radical Surgery - the principal weapon in use today for treating cancer; the surgeon cuts widely around the cancerous mass hoping that none of the cancer cells have microscopically metastasized; the surgeon and other cancer experts generally have no way of knowing whether an individual case has already spread microscopically; however, the smaller the original cancer mass, the less likely it is to have spread.

Mortality Rate - the number of people dying as a result of cancer each year; it is generally given as the number of cancer deaths per 100,000 general population. In America, the average figure is about 170/100,000.

Incidence Rate - the number of new cases that are diagnosed each year, again given per 100,000; in America the average figure is about 340/100,000; about one-half of this number will eventually die of their disease, but over a period of 2-8 years; the other half of the newly diagnosed cancer cases will live out a normal life expectancy and die of some other cause.

Industry-Related Cancer - a cancer whose cause can be, at least in part, traced back to a distinct exposure to a chemical or sometimes a physical agent that was present in the "work-place"; this generally encompasses employees and, more rarely, members of their families who are exposed to the employees "contaminated" work clothes.

Environmental Cancer - refers to most cancers, possibly 80%; however, the term "environment" is all-encompassing and relates mostly to the personal environment that results from life-styles, habits, and dietary factors; occupational exposures, and industry-related events comprise a minor component of "environmental cancer".

Carcinogen - an agent, chemical or physical, that is capable of initiating irreparable damage to a cell, such that the cell may be ultimately transformed into a cancer cell.

Co-Carcinogen - a chemical which by itself is incapable of causing cancer, but in combination with small doses of carcinogens (doses too small to cause cancer) will cause the development of cancers.

Epidemiology - the science of studying what disease occurs in which types of people, and under what circumstances - it constitutes medical detective work.

II. HOW CANCERS START

Cancer cells are no longer "self-controlled", the way normal cells are. Of the many trillions of cells in our bodies, many of them divide and multiply in order to replace "worn out" cells. Most remarkable is that the normal replacements are exactly like the worn-out ones. Cancers start as a result of some cells losing their normal control mechanisms. This happens as a result of damaging the genetic material and the delicate membranes of a cell beyond repair. It is important to realize that from conception, i.e., when a sperm and egg cell have united to form a unique individual, that single cell and all of its subsequent dividing cells are constantly barraged by damaging agents such as viruses, chemicals, and ionizing radiation. In the overwhelming majority of damaging insults, our cells repair themselves. When repair is inadequate, we see the development of birth defects, cancer, or death. The genetic material of the nucleus, the DNA, has incredible repair machinery, and the membranes of a cell, in spite of their extraordinary delicacy and complexity, are undergoing incessant replacement, 24 hours a day, 365 days a year. In short, evolution has given us resilient cells so that our bodies can take a certain amount of damage. However, the repair systems can be overloaded and some damaging agents can specifically attack the repair systems.

It is clear that there are certain tolerance limits, and if exceeded, the results may be birth defects, cancer or cell death.

Most cancers are the result of a complex sequence of damaging events that have not been repaired. However, the damage need not be expressed; there is a need to have other factors which will "bring out" the cancerous damage. In some instances, it may take 20-25 years to "bring out" the cancerous damage. This is referred to as the "lag phase" and is best exemplified by the survivors of the atomic blasts at Hiroshima and Nagasaki. These large amounts of radiation caused irreparable damage to cells, but the cancerous nature of the damage was not expressed as a lump of uncontrolled cells until 20-25 years later. In these and a few other instances, there are exposures to a single damaging agent and clear cut blame can be affixed to that agent.

In the overwhelming majority of cancers, there are multiple agents which interact and cause cumulative damage. While there are many hundreds of damaging agents, there are only a few different types of parts in a cell; hence, the same type of cell part may be damaged by several different substances. We can therefore see additive effects, and sometimes synergism, wherein the result is more than just additive.

III. THE CAUSES OF HUMAN CANCERS

The causes of many cancers are known and are listed below. The numbers in parentheses represent the percent of total cancer deaths caused by that particular type of cancer.

<u>Type of Cancer</u>	<u>(% of Deaths)</u>	<u>Causes</u>
o lung cancer	(20%)	cigarette smoking*
o mouth cancer	(2%)	cigarette smoking* <u>plus</u> excess alcoholism** <u>plus</u> inadequate mouth care
o larynx cancer ("voice box")	(1%)	cigarette smoking* <u>plus</u> excess alcoholism**
o esophagus cancer ("food tube")	(5%)	cigarette smoking* <u>plus</u> excess alcoholism**
o colon and rectal	(16%)	high dietary fat <u>plus</u> low dietary fibre
o liver cancer (ordinary type)	(0.5%)	excess alcoholism**
o urinary bladder cancer	(5%)	unrestricted use of certain chemicals used in dye production
o mesothelioma	(0.001%)	unrestricted use of asbestos
o hemangiosarcoma (a special type of liver cancer)	(0.001%)	unrestricted use of vinyl chloride

From the preceding list, it is clear that we know what causes over 50% of cancer deaths. There are several major cancer types whose causes are not known and account for a total of 30% of the deaths; these are cancers of the breast, ovaries, pancreas, and prostate. In some of these cancers, we know a spectrum of associated findings that add up to a greater risk, as in cancer of the breast, but this does not mean that a causal factor(s) that can be controlled has been discovered.

In addition to the above known causes of cancer, the following substances have been identified as potent carcinogens that are consumed in significant quantities (milligrams/day) by the majority of Americans; these substances have not yet been linked as causative factors to a specific type of cancer, as in the case of cigarette smoking and lung cancer, but they are nonetheless

* generally more than one pack/day

** generally more than three ounces of distilled liquor/day, or more than sixteen ounces of wine/day

IV. SPECIFIC PROBLEMS IN NEW JERSEY

The State of New Jersey is characterized statistically in a number of areas that have a relevance to the high cancer mortality rates, and which may also be involved in the solutions:

- o Most densely urbanized population
- o Lowest average land elevation with respect to sea-level
- o Highest unemployment rates
- o Reliance on local water sources of household consumption, in contradistinction to other states where water sources are not derived from the water table or rivers found in the concentrated urban areas.
- o Ranks 46th among the states in money spent for higher education per capita.
- o Until recent years lacked any credible medical schools; the two existing ones are developmental and reportedly rank 85th and 87th out of the approximate 100 American Schools according to the average scores of the students on the National Medical Board Examinations.
- o 75% of the interns and residents in the hospitals are foreign medical school graduates; this is the highest in the country; in New York, the second highest, the figure is 50%, while in California, this number is 5%; the reliance on foreigners is directly traceable to the absence of a large enough pool of graduating medical students who have a desire to undertake or continue their training in New Jersey hospitals.

The intermingling of medical, social, geographic, and geological factors listed above, provide clues for analyzing New Jersey's complex cancer problems, and the thought that is required for the solutions. There is no simple approach, and to highlight this, a critical examination of the New Jersey cancer data is in order.

The National Cancer Institute, under a program directed by Dr. Fraumeni, conducted a nationwide county-by-county study of cancer death rates per 100,000 general population. This was done by transcribing what was written on the death certificates. The medical records of the patients were not examined. The death rates from 1950-1969 were catalogued from death certificates, and were classified by anatomic site, and sex. Hence, the number of deaths from cancer of the mouth, or of the stomach, in males or females, in Atlantic County, or Essex County, and other such numbers became available. These numbers are interesting, and, in general, there is no county in New Jersey that could be considered "safe" according to these data.

The 1950-1969 mortality study was not designed by Dr. Fraumeni to provide information for definitive solutions. To employ this type of data for direct-ing conclusive solutions is a frank misuse. The study was conducted to provide an overview of the scope of the cancer problem in the nation and nothing more. The reasons that the Fraumeni data of 1950-1969 cannot be used to direct any solutions stem from the lack of medical records data such as:

- o Size of cancer and extent of disease when the patient was first admitted and diagnosed in the hospital. These two

factors, size and extent of disease at time of diagnosis, are the principal determinants of the patient's prognosis as to life or death; if the cancer is large, chances are very high that the cancer cells have already metastasized.

- o No treatment data is available to judge adequacy of therapy, and of long term, dedicated follow-up.
- o No patient histories with respect to dangerous habits, nature of the diet, previous places of residence, occupation, income and educational level.

If the Fraumeni data were to be used for a direct attack on the cancer problem, without any further extensive studies, several false leads would be pursued based simply on mobility and shifting of the population, especially in the years from 1950-1969. Miami, Florida has cancer death rates equal to those of New Jersey. With a moment's careful thought, the reason becomes obvious - many Miami residents are retired Northeasterners who have come from crowded urban settings. It is critical to remember that a 20-25 year lag period is required to develop a cancer from the numerous environmental exposures (including cigarettes and alcohol).

Further examination of the N.C.I. mortality studies reveals the following death rates of other urbanized areas and their suburbs.

o New York City	215/100,000
o Westchester County (a Northern suburb of New York City)	200/100,000
o Nassau County (an Eastern suburb of New York City)	212/100,000
o Philadelphia	221/100,000
o Chicago	206/100,000
o St. Louis City, Missouri	220/100,000
o San Francisco	206/100,000

Since New Jersey received former dwellers of New York City and Philadelphia during the post-war years of suburban expansion, circumstances in these two cities may ultimately be responsible. Westchester and Nassau Counties may be high in mortality rates for the same reason that New Jersey is, i.e., the city dwellers led life-styles that predisposed to cancer and when the population shift out of the cities occurred, these individuals carried their irreparably damaged DNA and altered cell parts with them. If many of these individuals were in the lag phase (20-25 years), this could explain, at least in part, the findings. This is a similar explanation for the high rates in Miami, Florida.

There are many other confounding factors that preclude conclusions, and these are as follows:

- o While the population was shifting into the suburbs, including into New Jersey, industry also continued to grow in the state.
- o In the 1930's-1940's (the period of time when people were being exposed in order to develop their cancers and live 20-25 years later in 1950-1969), industry and government were largely ignorant of chemical carcinogens, hence fewer safeguards may have been used in this period.

V. NEW JERSEY INDUSTRY AND CANCER

The county-by-county death statistics of 1950-1969 are divided by anatomic site and by sex. The overall death rates for white males was the highest in the country, but this was not the case for females or non-whites. This can lead to a great deal of speculation, but the data is insufficient for reaching a solution.

The Fraumeni numbers indicate that the national average death rate from cancer was 174/100,000 (for white males), while in New Jersey, it was 205/100,000, a 17% increase. In females, the national average was 130 and, in New Jersey, 148/100,000, about a 14% increase. These are the increases that have precipitated the current controversy. The increases are significant and were consistent through the 19 years (1950-1969) of the study. More detailed numbers are presented in appendix A.

Adding to this data are the estimates of the American Cancer Society, regarding New Jersey incidences and mortalities. These are given in appendix B.

The conclusions pertaining to New Jersey are as follows:

1. General Findings on New Jersey:
Proportionally, New Jersey's figure on cancer mortality is greater than that of any other state in America. Nearly all of New Jersey falls into the highest decile in the U.S. (top 10%) for white males and for white females (Appendix A).
2. Cancer categories in which the mortality, proportional to population, is higher in New Jersey than in any other state:
 - o Rectal cancer (males and females combined)
The rating of New Jersey as having the worst concentration of mortality from rectal cancer is based largely on the extremely high death rates among both men and women in northern New Jersey, the Trenton-Princeton area included. This would not be classified as an industry-related cancer by cancer specialists.
 - o Bladder cancer (males only - women not significantly different from the rest of the United States) A proportion of these are industry-related.
 - o Cancer of the ovary - The mortality figures among the women of New Jersey's northwest corner -- Sussex and Warren Counties -- ranks with the worst in the country. Mortality figures are nearly as high among women in Bergen, Morris, and Passaic Counties. This causes the mortality figures for women in northern New Jersey in this cancer classification to be worse than for any other single concentrated area in the nation. This would not be classified as an industry-related cancer.
3. Cancer categories in which the mortality rates for the state of New Jersey rank approximately with the worst statewide records in the nation:
 - o Cancer of the large intestine (males and females combined)
New Jersey ranks with Rhode Island as the worst in the nation. This is not regarded as industry-related.

- o Cancer of the Trachea, Bronchus, and Lung - Mortality figures among New Jersey males rank as the highest in the U.S., along with the mortality among males in Louisiana and Florida. A small proportion of these are industry-related.
 - o Breast Cancer among females - The record in this category is worst in New York, with New Jersey, Rhode Island and Massachusetts just behind. This is not classified as industry-related.
4. Cancer categories in which mortality for portions of New Jersey ranks with the worst areas in the nation.
- o Cancer of the Esophagus (males only) - Northern New Jersey, Connecticut, New York City, Long Island, and the Greater Philadelphia Area of Pennsylvania, combined, comprise the worst single area in the U.S. for mortality figures in this category. The rate for females in northern New Jersey is above the national average. This is generally caused by a combination of cigarette smoking and excessive alcoholism. In addition, women with rare benign esophageal problems are predisposed to cancer of this organ. It is not generally regarded as being industry-related.
 - o Cancer of the Larynx (males only) - The highest concentrations of mortality from this type of cancer are in northern New Jersey, New York City, Long Island, the Greater Philadelphia Area and the Pittsburgh area. A small proportion of these are industry-related, but generally are caused by a combination of cigarette smoking and excessive alcoholism.

If an attempt is made to correlate the types of cancers that are known to be "industry-related" (i.e., industrial substances contribute together with other factors to the development of cancer), with the types of cancers occurring in New Jersey, it would be expected that most of the excess cancer deaths in New Jersey would fall into the "industry-related" types - this is not the case.

There are about 14,000 deaths each year in New Jersey, and about 26,000 new cases each year (from appendix B, estimates for 1974). If New Jersey had average U.S. rates, these numbers would be 12,000 and 22,000, respectively. The excess 2,000 deaths each year and the excess 4,000 new cases each year should fall into the classical "industry-related" categories which include a small portion of cancers of the:

- o Urinary bladder
- o Respiratory system
- o Liver
- o Skin
- o Lymph organs and bone marrow (lymphomas and leukemias)

Instead, the "excess" 2,000 deaths are spread across all of the anatomic sites in the N.C.I. mortality study (lip, salivary glands, nasopharynx, mouth, esophagus, stomach, large intestine, rectum, liver, pancreas, upper and lower respiratory tracts, breast, uterine cervix, body of uterus, ovaries, prostate, testis, kidneys, urinary bladder, skin, eye, brain, endocrines, bones, and connective tissues). Further, there are some negative correlations, e.g. benzene is reportedly an industrial pollutant in New Jersey and supposedly is

the highest in the nation, yet the cancer that should be caused by benzene, such as lymphomas and leukemias, occur at the lower national rates.

o Lymphomas N.J. (White males)	4.93
U.S. (White males)	4.89
o Leukemias N.J. (White males)	8.74
U.S. (White males)	8.81

Analyses performed by Dr. Donald Louria, Chairman of the Department of Preventive Medicine and Community Health, New Jersey Medical School, Newark, and presented under the title of "Cancer in New Jersey: An Overview" at the "Seminar for Physicians: Cancer Risk Identification within New Jersey, and Methods of Cancer Control", May 12, 1976, in Cherry Hill, found that only 600 of the 14,000 cancer deaths in New Jersey might be industry-related. A different analytic study conducted by Dr. Harry B. Demopoulos, former Director of the Cancer Institute of New Jersey, also revealed the same types of numbers, i.e., no more than 600 of the 14,000 cancer deaths could be industry-related, among the deaths reported in 1950-1969; this report was given by Dr. Demopoulos to the "Skevin Committee" in testimony on November 5, 1976.

These two independent analyses therefore indicate that 4.3% of the total cancer deaths in New Jersey could be "industry-related". These percentages are important and yet it is essential to realize that these analyses are based on insufficient data and represent the highest possible number of "industry-related" exposures. This does not mean that industrial pollutants were solely responsible. If an analysis is attempted of how many cancer deaths were caused solely by industrial pollutants, the data is found to be totally inadequate and very soft estimates yield fractions of 1%.

While the cited studies and analyses refer to past events, there is meager data since 1969. The American Cancer Society estimates do not provide sufficient information to answer the obvious question - are cancer mortality rates and incidences in New Jersey the same, better, or worse than for the period 1950-1969? Current, but inadequate, "samples" from hospitals that have excellent Tumor Registries indicate that their cancer case workload has increased by 50% in the past 5 years, and that the average age of the cancer patient is younger by 5-6 years. This type of data is fragmentary and may reflect changes in referral patterns to some hospitals, or it may indicate a worsening of the New Jersey cancer problems. Clear cut answers require far more data.

VI. THE LIST OF CARCINOGENESIS IN BILL NO. S-3035, SECTION 6

The list includes a mix of substances

- o Some are no longer in use, e.g., 4 Aminodiphenyl
- o Some are not carcinogenic, e.g., alpha naphthylamine - its carcinogenicity was proven to be due to contamination of alpha naphthylamine
- o Some are very potent carcinogens, e.g., benzidine
- o Some are rather weak carcinogens, e.g., asbestos and vinyl chloride
- o All are currently handled with precautions that lead to low exposures of workers such that cancers will not develop.

Asbestos and vinyl chloride are termed weak carcinogens on the basis of careful analyses of the cancers that they cause. Excessive concerns over asbestos as a carcinogen has been prompted by cases such as that of a 14 year old boy who developed mesothelioma; he apparently was exposed to this when he was helping his father to smooth down the joints of the newly replaced plaster board walls in their home. Asbestos was in the joint material, not in the plaster board. There was no other known asbestos exposure, and the father did not otherwise work with it. Cases such as this are exceedingly rare and form an inadequate data base. Mesothelioma does occur in nature, without asbestos exposure, and it cannot be ascertained whether this 14 year old boy would have been a "Natural" victim, or whether the asbestos was indeed causal. Far more numbers are needed for statistically valid studies in such unusual cases.

The relative weaknesses of asbestos and vinyl chloride are borne out by the fact that workers who were exposed to very large, uncontrolled levels developed relatively few cancers as a result. This is in contrast to a powerful carcinogen such as 3,4-dimethyl 4-aminodiphenyl, wherein 15-20% of exposed workers developed urinary bladder cancer in a short lag phase (7-8 years). When the amounts of asbestos, vinyl chloride, and 4-aminodiphenyl are compared, versus the numbers of cancers developed, then asbestos and vinyl chloride are weak carcinogens.

The idea of a comprehensive ban on all carcinogens would lead to the restriction of many activities and substances. Radiation, by x-rays, is the most powerful carcinogenic agent. There are methods for converting physical carcinogens into chemical equivalents, and when this is done, x-rays are quite potent. When the Manhattan Project (building the A-Bomb during World War II) was in full swing, the Department of Pathology at Rochester University was given the job of determining the ill-effects of radiation. There were some individuals who were so impressed by the pathologic changes that they decreed a "Zero-exposure". When subsequent, rational studies were done, it was found that small doses of radiation could be tolerated, even though the effects were cumulative over a life time. This type of exacting research has made it possible to use x-rays for medical use, nuclear plants for energy, etc. The same type of information must be obtained for chemicals.

APPENDIX A

NATIONAL CANCER
INSTITUTE

MORTALITY STUDY

1950 - 1969

- EXHIBIT 1 - New Jersey Cancer Mortality 1950-1969
- EXHIBIT 2 - New Jersey Cancer Mortality 1950-1969, by County
- EXHIBIT 3 - States With Highest Cancer Mortality, 1950-1969
- EXHIBIT 4 - All Malignant Neoplasms 1950-1969, by State

CANCER MORTALITY
1950-1969

All Malignant Neoplasms

(All cancer categories) causing mortality
(Male, Female Combined)

	<u>Number</u> ¹	<u>Annual Rate</u> (per 100,000 pop. whites only)
Total deaths, United States	2,572,035 - M	174.04 - M
	2,253,282 - F	130.10 - F
Total deaths, New Jersey	106,900 - M	205.01 - M
	93,379 - F	147.92 - F

Highest Rates by New Jersey Counties:

Hudson	14,049 - M	231.8 - M
	11,004 - F	153.5 - F
Middlesex	6,556 - M	220.8 - M
	5,251 - F	149.2 - F
Essex	16,975 - M	215.1 - M
	15,258 - F	154.5 - F

Highest Number by New Jersey counties:

Essex	16,975 - M	215.1 - M
	15,258 - F	154.5 - F
Hudson	14,049 - M	231.8 - M
	11,004 - F	153.5 - F
Bergen	12,863 - M	202.1 - M
	11,894 - F	148.1 - F

1. This number is the total deaths, from 1950-1969.

ALL MALIGNANT NEOPLASMS (all cancer categories) causing mortality

New Jersey, by counties

	<u>White</u>				<u>Non-white</u>			
	Male		Female		Male		Female	
	<u>Total</u>	<u>Rate</u>	<u>Total</u>	<u>Rate</u>	<u>Total</u>	<u>Rate</u>	<u>Total</u>	<u>Rate</u>
Atlantic	3,213	195.3	2,897	145.2	598	220.1	484	150.8
Bergen	12,863	202.1	11,894	148.1	373	281.4	344	192.2
Burlington	2,692	188.5	2,395	139.9	196	216.3	138	141.0
Camden	6,329	204.7	5,647	148.4	586	228.0	520	177.1
Cape May	1,264	194.7	1,037	142.9	72	184.2	78	176.8
Cumberland	1,683	181.4	1,551	140.0	150	155.8	141	144.2
Essex	16,975	215.1	15,258	154.5	2,385	219.2	2,155	154.6
Gloucester	1,935	191.1	1,674	141.8	182	183.1	142	146.0
Hudson	14,049	231.8	11,004	153.5	645	289.7	571	197.3
Hunterdon	1,025	175.7	926	143.3	17	297.1	19	303.2
Mercer	4,639	205.4	3,973	145.2	422	203.5	351	150.1
Middlesex	6,556	220.8	5,251	149.2	282	279.0	223	208.2
Monmouth	5,754	199.0	5,340	147.6	515	225.4	360	135.3
Morris	3,851	179.2	3,606	135.5	109	248.6	98	170.1
Ocean	2,577	185.5	2,028	137.2	69	265.3	64	231.6
Passaic	7,981	209.5	6,631	147.8	355	271.5	302	182.7
Salem	848	185.9	731	146.6	147	232.0	97	161.9
Somerset	2,151	182.8	1,820	135.7	74	226.9	66	228.5
Sussex	923	180.8	797	140.5	18	913.3	12	465.4
Union	8,311	203.4	7,757	151.6	620	252.2	534	166.3
Warren	1,281	189.3	1,162	147.7	15	274.2	10	187.7
New Jersey	106,900	205.01	93,379	147.92	7,830	230.33	6,709	163.41

Rates indicated are annual per 100,000 population
Total deaths, for the period, 1950-1969, are given.

STATES WITH THE HIGHEST CANCER MORTALITY RATES - 1950-1969

	White Males		White Females	
	¹ <u>Number</u>	<u>Annual Rate</u> <u>(per 100,000 pop.)</u>	<u>Number</u>	<u>Annual Rate</u> <u>(per 100,000 pop.)</u>
1. New Jersey	106,900	205.01	93,379	147.92
2. Rhode Island	16,434	203.17	14,770	143.37
3. New York	307,997	199.24	273,316	148.01
4. Connecticut	44,501	195.68	38,333	138.64
5. Maryland	39,157	192.43	35,366	138.66
6. Massachusetts	95,772	192.23	90,506	139.47
7. Louisiana	32,662	190.39	24,611	118.98
8. New Hampshire	11,944	189.19	10,655	140.20

1. This number is the total deaths, from 1950-1969.

ALL MALIGNANT NEOPLASMS (ICD 140 THROUGH 205) 1950-1969 by State

APPENDIX A - EXHIBIT 4

STATE	WHITE MALE		NONWHITE MALE			WHITE FEMALE		NONWHITE FEMALE	
	NUMBER	RATE	NUMBER	RATE		NUMBER	RATE	NUMBER	RATE
ALABAMA	29066	152.44	10156	140.24		25643	113.88	10915	127.17
ARIZONA	14782	156.19	1062	128.83		11301	110.48	811	111.76
ARKANSAS	22197	144.14	4915	132.13		17726	108.03	4660	121.99
CALIFORNIA	216761	171.39	15086	170.77		195171	128.09	10785	124.10
COLORADO	21816	144.19	620	169.99		20219	117.29	462	116.37
CONNECTICUT	44501	195.68	1439	231.75		38333	138.64	1047	139.39
DELAWARE	5691	179.75	1100	235.97		5171	134.42	774	162.57
DISTRICT OF COLUMBIA	7915	203.75	6790	264.55		8123	141.73	5445	166.05
FLORIDA	76859	163.58	10683	179.78		56475	110.54	8959	133.14
GEORGIA	33499	153.77	11546	152.23		30383	111.27	12652	130.90
IDAHO	8546	139.02	103	123.67		6647	110.15	73	109.27
ILLINOIS	162672	182.81	15012	216.77		142394	137.78	13040	160.98
INDIANA	67635	164.24	4139	210.85		62111	130.60	3408	157.97
IOWA	46897	156.60	516	213.55		42106	124.14	380	151.28
KANSAS	30949	143.89	1644	189.14		28094	115.08	1286	141.54
KENTUCKY	38813	146.39	4220	199.50		36016	121.61	3580	154.82
LOUISIANA	32662	190.39	14576	193.68		24611	118.98	12466	143.77
MAINE	17793	178.53	47	154.11		16135	140.46	48	161.70
MARYLAND	39157	192.43	8099	224.84		35366	138.66	6080	154.73
MASSACHUSETTS	95772	192.23	1971	215.92		90506	139.47	1480	141.86
MICHIGAN	113318	182.42	9800	210.58		92946	135.63	7830	151.26
MINNESOTA	54422	158.24	539	176.18		47219	127.05	380	128.98
MISSISSIPPI	18050	156.40	9846	136.74		15030	113.03	10146	129.44
MISSOURI	70822	164.55	7094	213.58		63213	125.58	5882	159.07
MONTANA	10201	153.07	227	140.69		7453	119.28	207	157.24
NEBRASKA	23955	157.48	576	219.93		20736	123.75	482	175.99
NEVADA	4050	167.39	179	136.61		2654	118.79	180	148.97
NEW HAMPSHIRE	11944	189.19	17	130.20		10655	140.20	16	110.02
NEW JERSEY	106900	205.01	7830	230.33		93379	147.92	6709	163.41
NEW MEXICO	7689	136.30	398	95.50		6915	115.10	352	96.48
NEW YORK	307997	199.24	21572	227.69		273316	148.01	18920	152.80
NORTH CAROLINA	36533	140.11	10549	147.17		33864	106.97	10701	124.39
NORTH DAKOTA	9039	144.34	97	143.57		7084	119.45	110	165.14
OHIO	146265	178.41	12520	226.35		130411	136.25	9762	159.70
OKLAHOMA	34295	155.95	2936	144.80		28878	116.03	2904	131.99
OREGON	28314	155.12	471	158.47		23148	119.27	307	122.88
PENNSYLVANIA	189018	183.08	15086	236.89		170851	140.26	11528	157.10
RHODE ISLAND	16434	203.17	342	236.56		14770	143.37	212	133.64
SOUTH CAROLINA	16754	154.96	7195	145.59		15295	111.59	7647	123.97
SOUTH DAKOTA	10513	149.86	252	137.79		8384	119.98	302	184.07
TENNESSEE	38356	146.28	7874	163.79		35763	115.95	7796	142.51
TEXAS	107557	158.51	15821	167.53		90072	113.34	13452	128.45
UTAH	8369	133.14	198	152.86		7233	102.06	101	108.96
VERMONT	6981	173.02	18	207.22		6551	136.41	11	119.06
VIRGINIA	38218	157.53	11801	189.62		35279	119.12	9254	138.94
WASHINGTON	45015	164.20	1242	169.72		36251	123.43	773	129.30
WEST VIRGINIA	26025	154.62	1771	181.28		22241	123.75	1373	149.77
WISCONSIN	65376	166.23	876	191.54		56898	132.35	707	140.97
WYOMING	3953	138.93	64	123.16		2962	109.09	52	130.08
UNITED STATES	2572035	174.04	264108	184.28		2253292	130.10	228561	139.18

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APPENDIX B

AMERICAN CANCER
SOCIETY

MORTALITY AND INCIDENCE ESTIMATES

1974

**Estimated Cancer Deaths for All Sites,
Plus Major Sites, by State - 1974**

State	All Sites		Major Sites								
	Number of Deaths	Death Rate per 100,000 Population	Breast	Colon-Rectum	Lung	Oral	Uterus	Prostate	Stomach	Pancreas	Leukemia
Alabama	5,400	155	425	550	1,200	125	250	325	175	325	200
Alaska	200	62	15	20	50	5	10	10	10	10	10
Arizona	2,600	134	225	300	650	70	50	150	100	150	125
Arkansas	3,500	175	225	400	850	75	100	250	125	200	200
California	33,200	153	3,200	4,200	7,300	750	1,000	1,400	1,400	1,800	1,400
Colorado	2,900	122	275	400	500	60	70	175	100	175	150
Connecticut	5,400	167	500	800	1,000	175	125	250	250	275	250
Delaware	900	152	70	125	225	25	20	30	30	50	30
Dist. of Columbia	1,600	199	175	200	325	60	60	80	60	80	40
Florida	14,600	197	1,200	1,900	3,500	350	400	800	600	700	500
Georgia	6,300	130	550	650	1,500	150	275	375	250	350	275
Hawaii	900	110	60	90	150	30	20	30	90	70	50
Idaho	1,100	150	90	125	175	20	25	80	40	70	70
Illinois	19,900	172	1,900	2,800	4,100	450	700	1,000	850	1,100	900
Indiana	8,600	158	800	1,300	1,800	175	325	450	250	450	350
Iowa	5,200	182	500	850	950	100	125	350	175	250	275
Kansas	4,000	175	375	550	750	90	125	275	100	225	200
Kentucky	5,400	165	425	700	1,200	150	200	300	150	325	275
Louisiana	5,900	156	475	600	1,500	150	200	325	250	300	250
Maine	2,200	212	175	300	425	40	60	125	90	100	80
Maryland	6,400	150	600	850	1,600	175	200	300	200	325	200
Massachusetts	11,200	189	1,200	1,700	2,200	300	300	475	525	600	400
Michigan	14,500	155	1,400	1,900	3,100	300	425	750	525	700	550
Minnesota	6,500	163	600	950	1,100	125	125	450	300	375	275
Mississippi	3,600	162	275	400	750	70	125	250	150	225	200
Missouri	8,900	184	800	1,200	2,100	175	275	550	275	475	400
Montana	1,300	185	100	150	200	25	30	70	50	80	60
Nebraska	2,800	185	250	425	475	60	70	175	100	175	150
Nevada	750	133	60	80	200	15	20	25	10	50	30
New Hampshire	1,500	189	150	250	325	30	50	80	40	80	70
New Jersey	14,000	184	1,400	2,200	3,000	300	400	550	650	700	500
New Mexico	1,200	115	100	125	200	20	30	50	50	70	50
New York	37,700	200	4,000	5,800	7,400	800	1,000	1,500	1,700	2,000	1,400
North Carolina	6,900	132	600	700	1,400	175	300	375	225	375	350
North Dakota	1,100	181	90	150	175	15	25	70	60	70	50
Ohio	19,000	172	1,800	2,700	4,100	425	650	900	700	900	750
Oklahoma	4,500	170	350	550	950	80	125	300	150	275	200
Oregon	3,700	166	325	500	850	80	100	200	125	200	200
Pennsylvania	23,500	197	2,300	3,600	4,600	500	750	1,100	950	1,200	950
Rhode Island	2,000	204	200	350	400	60	50	80	100	90	60
South Carolina	3,500	132	300	375	750	80	150	200	100	200	150
South Dakota	1,200	182	80	175	200	20	40	100	50	90	80
Tennessee	6,300	155	550	750	1,400	150	225	375	200	350	275
Texas	17,100	144	1,400	1,800	4,000	375	600	800	650	950	900
Utah	1,100	97	100	150	175	20	30	80	50	60	60
Vermont	850	182	70	150	175	20	30	50	30	50	40
Virginia	6,800	139	650	800	1,500	175	250	375	225	375	275
Washington	5,600	154	500	700	1,300	125	150	300	225	325	275
West Virginia	3,400	201	250	400	850	70	125	200	125	200	125
Wisconsin	7,800	169	800	1,200	1,300	175	200	450	350	400	325
Wyoming	500	149	40	60	75	10	10	40	15	30	20
United States	355,000	167	33,000	48,000	75,000	8,000	11,000	18,000	14,000	19,000	15,000

**Estimated New Cancer Cases for All Sites,
Plus Major Sites, by State - 1974**

State	All Sites*	Major Sites								
	Number of Cases	Breast	Colon-Rectum	Lung	Oral	Uterus (Invasive)	Prostate	Stomach	Pancreas	Leukemia
Alabama	10,000	1,100	1,100	1,300	350	1,000	950	300	350	300
Alaska	300	50	50	60	15	20	30	15	10	20
Arizona	4,800	600	600	700	150	350	450	150	150	150
Arkansas	6,400	600	800	1,000	200	500	750	200	200	300
California	61,000	8,700	8,700	8,100	2,300	3,900	4,200	2,300	1,900	2,000
Colorado	5,400	750	800	550	150	350	550	150	200	200
Connecticut	10,000	1,400	1,700	1,100	500	550	750	400	300	350
Delaware	1,700	200	300	250	70	100	90	50	50	40
Dist. of Columbia	3,100	500	400	350	200	250	250	90	80	60
Florida	27,000	3,300	3,900	3,900	1,100	1,600	2,400	1,000	750	700
Georgia	12,000	1,500	1,400	1,700	450	1,100	1,100	400	350	400
Hawaii	1,700	150	200	200	90	80	60	150	70	70
Idaho	2,100	250	250	200	50	100	250	70	70	100
Illinois	37,000	5,200	5,800	4,500	1,400	2,700	3,000	1,400	1,200	1,200
Indiana	16,000	2,200	2,700	2,000	500	1,300	1,400	400	450	500
Iowa	9,500	1,400	1,800	1,000	300	650	1,100	300	250	400
Kansas	7,300	1,000	1,100	800	300	650	800	150	250	300
Kentucky	10,000	1,200	1,400	1,300	450	900	900	250	350	400
Louisiana	11,000	1,300	1,200	1,700	450	850	950	400	300	350
Maine	3,600	500	600	450	125	250	400	150	100	100
Maryland	12,000	1,600	1,800	1,800	500	900	900	350	350	300
Massachusetts	21,000	3,300	3,500	2,400	900	1,200	1,400	850	600	550
Michigan	27,000	3,800	3,900	3,400	900	1,800	2,300	850	750	750
Minnesota	12,000	1,600	2,000	1,200	400	600	1,300	500	400	400
Mississippi	6,600	750	800	800	200	700	750	250	250	300
Missouri	16,000	2,200	2,500	2,300	500	1,200	1,700	450	500	550
Montana	2,000	250	300	250	70	150	200	80	80	80
Nebraska	5,300	700	900	550	150	300	500	150	200	200
Nevada	1,300	150	150	250	50	60	80	15	50	40
New Hampshire	2,800	400	500	350	90	200	250	70	80	100
New Jersey	26,000	3,800	4,500	3,300	900	1,600	1,700	1,100	750	700
New Mexico	2,200	250	250	250	60	150	150	80	70	70
New York	70,000	10,800	12,000	8,200	2,500	4,300	4,500	2,800	2,100	2,000
North Carolina	13,000	1,600	1,400	1,600	500	1,200	1,100	350	400	500
North Dakota	2,000	250	300	200	50	80	200	100	70	70
Ohio	35,000	4,900	5,600	4,500	1,300	2,500	2,700	1,200	950	1,000
Oklahoma	8,200	950	1,100	1,100	250	600	900	250	300	300
Oregon	6,800	900	1,000	950	250	500	600	200	200	300
Pennsylvania	43,000	6,300	7,400	5,100	1,500	2,800	3,300	1,600	1,300	1,300
Rhode Island	3,700	550	700	450	200	200	300	150	90	80
South Carolina	6,300	800	750	850	250	700	600	150	200	200
South Dakota	2,200	250	350	250	50	150	300	80	90	100
Tennessee	12,000	1,500	1,600	1,500	450	1,000	1,100	300	350	400
Texas	31,000	3,800	3,700	4,400	1,100	2,300	2,400	1,100	1,000	1,200
Utah	2,100	300	300	200	50	200	250	80	60	80
Vermont	1,600	200	300	200	60	100	150	50	50	60
Virginia	13,000	1,800	1,700	1,700	500	1,100	1,100	350	400	400
Washington	10,000	1,400	1,500	1,400	400	700	900	350	350	400
West Virginia	6,200	700	800	900	200	600	600	200	200	150
Wisconsin	14,000	2,200	2,500	1,400	500	850	1,300	600	400	450
Wyoming	800	100	100	90	20	60	90	20	30	30
United States	655,000	90,000	99,000	83,000	24,000	46,000	54,000	23,000	20,000	21,000

*Does not include carcinoma-in-situ of the uterine cervix or superficial skin cancers. These estimates are offered as a rough guide and should not be regarded as definitive. They are calculated according to the distribution of estimated 1974 cancer deaths by state. Especially note that year to year changes may only represent improvements in the basic data.

PHARMACEUTICAL MANUFACTURERS

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Statement of Bruce J. Brennan, Vice President and General Counsel
Of the Pharmaceutical Manufacturers Association
To the Senate Commission on the Incidence of Cancer in New Jersey
Concerning S. 3035, a Bill Banning Certain Carcinogenic Substances

Trenton, New Jersey

February 18, 1977

The Pharmaceutical Manufacturers Association respectfully submits its views, on behalf of the prescription drug industry in New Jersey, concerning the provisions in S. 3035 which would ban the manufacture, distribution or use of certain carcinogenic substances within the State.

PMA represents 129 health product manufacturing firms nationwide, who have as a primary objective the enhancement of human health through the discovery, development, manufacture and marketing of prescription medicines and other products for the prevention, treatment, diagnosis and cure of disease -- including cancer.

The PMA member companies comply with all federal and state laws and regulations providing for the protection of employees, the general public, and environment. We also seek to strengthen those laws and regulations as appropriate through the implementation of industrial guidelines. Protection of the general public and our employees from unwarranted exposure to carcinogenic compounds is a serious commitment for us.

One of the most important functions of the pharmaceutical industry is the conduct of research and product development aimed at finding new and more effective medicines. In the state of New Jersey, the leading pharmaceutical firms invest more than \$340 million annually in their research and development programs.

Virtually all of the compounds specified in S. 3035 are used in the course of pharmaceutical research and development. Indeed, the U. S. Food and Drug Administration (FDA) and Environmental Protection Agency (EPA) require that several of them be used as standard controls in laboratory research on cancer.

It should be noted in this connection that S. 3035 may be inconsistent with existing Federal Occupational Safety and Health Act standards. These standards provide for controlled uses of small amounts of carcinogens for laboratory purposes, and impose extremely detailed requirements to ensure their safe and proper use. Attached to this statement are excerpts from the pertinent OSHA standards.

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Representing manufacturers of prescription pharmaceuticals,
medical devices and diagnostic products

The pharmaceutical industry of course endorses these detailed safeguards, and assisted in their formulation. The Act requires that if Federal standards already govern a given issue, a state which desires to assume responsibility for standards of its own must first obtain approval of a State plan from the Secretary of Labor. All of the agents named in S. 3035 are the subject of present OSHA regulations.

We do not believe those who favor S. 3035 really want to dictate that specific compounds cannot be used in medical research, whether in industrial or academic laboratories, without any regard for the implication of such arbitrary action. However, in banning the production, distribution, or use of certain compounds thought to be carcinogenic, this bill would place pharmaceutical research and development in the state of New Jersey in serious jeopardy.

Many of the named compounds are essential to the manufacture of prescription medicines as well. For example, one compound (methyl chloromethyl ether) is necessary in the production of a new life-saving antibiotic soon to be made available to the medical profession. The methyl chloromethyl ether is completely destroyed during the process of synthesis. When it is being used, all production methods and safeguards are closely supervised and are conducted in accordance with federal regulations.

Approximately one-third of the 50,500 people employed by the New Jersey pharmaceutical industry are directly involved in research and development. New Jersey leads all states in pharmaceutical research. About 20% of all industrial research in the state is performed by health products firms. The New Jersey pharmaceutical industry has an annual payroll of over \$825 million, pays some \$47 million a year in taxes, invests millions of dollars each year in the state, and is one of the few manufacturing industries which is growing in terms of employment and payroll. S. 3035 would surely diminish very substantially the incentive for pharmaceutical companies to remain in the state and increase its investments here.

S. 3035 goes far beyond existing federal statutes by banning outright the use of many compounds essential to research progress leading to the discovery of life-saving medicines. The Pharmaceutical Manufacturers Association believes enactment of the bill in its present form would not be in the best interests of the citizens of New Jersey or the nation.

Title 29—Labor

CHAPTER XVII—OCCUPATIONAL SAFETY
AND HEALTH ADMINISTRATION, DE-
PARTMENT OF LABORPART 1910—OCCUPATIONAL SAFETY
AND HEALTH STANDARDS

Carcinogens

Pursuant to section 6(b) and (c) of the Williams-Steiger Occupational Safety and Health Act of 1970 (29 U.S.C. 655) and Secretary of Labor's Order No. 12-71 (36 FR 8754), Part 1910 of Title 29, Code of Federal Regulations, is hereby amended in the manner set forth below, in order to provide standards dealing with the exposure of employees to certain substances that are known to cause cancer.

Background. On May 22, 1972, the Deputy Assistant Secretary of Labor for Occupational Safety and Health requested information from the Director of the National Institute for Occupational Safety and Health (NIOSH) on nine substances alleged to be carcinogens. As part of his effort to gain the best available scientific data, the Director published on July 6, 1972, at 37 FR 13285, a request for information concerning 15 substances. The data, arguments, and conclusions received by NIOSH were made available to the Occupational Safety and Health Administration.

On January 4, 1973, a petition for an emergency temporary standard from the Oil, Chemical, and Atomic Workers Union (OCAW) and Health Research Group (HRG) was received by the Department of Labor. The petition contained relevant information on the danger of exposure to 10 carcinogens, and suggested regulations to prevent worker exposure to the substances.

On February 9, 1973, a notice was published in the *Federal Register* (38 FR 4037) of the receipt of the petition for issuance of an emergency temporary standard, and information was requested from interested persons on the issues involved. In response to the notice, more than 50 written comments were received.

An emergency temporary standard on carcinogens was promulgated on May 3, 1973, at 38 FR 10929. The standard concerned work practices and controls designed to protect employees from exposure to 14 carcinogenic substances.

A standard advisory committee on carcinogens was appointed and began its meetings on June 25, 1973. The members of the committee represented employers, employees, Federal and state agencies and professionals. The committee terminated its meetings on August 24, 1973, and submitted to the Assistant Secretary of Labor for Occupational Safety and Health its recommendations for a standard on certain carcinogens on August 27, 1973. The recommendations were published in the *Federal Register* on September 7, 1973 (38 FR 24375).

This rulemaking proceeding was commenced under section 6(b) and (c) of the Act, with the emergency temporary standard serving as a proposal as re-

quired by section 6(c)(3) of the Act. Notice of the proceeding was published in the *Federal Register* on July 16, 1973 (38 FR 18900). On July 27, 1973, a revision of the emergency temporary standard was published at 38 FR 20074, and an amended notice of rulemaking proceeding was published at 38 FR 22141, on August 16, 1973.

The notices invited interested persons to submit, prior to September 5, written comments, data and arguments concerning the proposals, and also provided for the presentation of oral testimony at a public hearing scheduled for September 11-14, 1973. Numerous written comments were received and about 36 parties testified at the hearing. The record of the hearing was initially held open until September 28, for additional comments. After the close and certification of the record by the administrative law judge, additional comments mailed on or before September 28 were received. On October 2 the judge reopened the record for the limited purpose of including these additional comments. On October 15, the judge closed the proceeding and forwarded the certified record to the Assistant Secretary of Labor for Occupational Safety and Health for final decision.

A final environmental impact statement on the proposed standard on carcinogens was filed with the Council on Environmental Quality on October 2, 1973, and copies were distributed to appropriate agencies. In a letter dated November 2, 1973, the Council pointed out alleged deficiencies in the statement filed. Pursuant to that letter, a supplement to the statement was sent to the Council on November 29, 1973, with a request for a waiver of the full, 30-day review period. By letter dated December 10, 1973, the Council advised that the request had been denied. Notice of the filing of the supplement was published by the Council on December 14, 1973 (38 FR 34488).

The following are the major issues raised in the record of this proceeding:

(1) **Selection of carcinogens.** Some participants in this proceeding have demanded to know the criteria for the selection of the 14 substances for regulation. As the written submission of Uniroyal Chemical notes, thirteen compounds derive from Appendix A to the 1972 TLV pamphlet published by the American Conference of Government Industrial Hygienists (ACGIH). Alpha-Naphthylamine, which is not in the appendix, has been added because it has frequently been found, in industrial experience and in epidemiologic studies, together with beta-naphthylamine, and because experimental animal studies demonstrate its independent carcinogenicity. Dimethyl sulfate, which is in the appendix, is not included in the standards because it was concluded after consideration of the relevant literature that the documentation of its carcinogenicity was inadequate. The substances listed by ACGIH (except one) were selected in order to take advantage of the work and judgment of that group. Also, ten of the

fourteen substances were proposed to the Occupational Safety and Health Administration (OSHA) for regulation by OCAW and HRG in their petition.

(2) **Documentation of carcinogenicity.** The National Institute for Occupational Safety and Health (NIOSH), as official scientific advisor to OSHA, submitted to OSHA fourteen hazard review documents; one for each of the substances included in the standards. Each hazard review document contains a summary and evaluation of information and data obtained by NIOSH, including experimental animal and epidemiologic data. All but one of the substances are considered by ACGIH to be carcinogenic in man and/or animals.

In promulgating these standards, OSHA has relied extensively but not exclusively, on the hazard review documents prepared by NIOSH. Some of the substances are recognized as human carcinogens by some employers participating in this proceeding. For instance, although Young Aniline Works apparently takes issue with the studies which demonstrated Benzidine to be a human carcinogen, the Benzidine Task Force of the Synthetic Organic Chemical Manufacturers Association does not oppose OSHA considering benzidine as carcinogenic to humans.

The essence of the NIOSH hazard review documents follows.

2-Acetylaminofluorene. Experimental animal investigations involving rats, mice, rabbits, dogs, hamsters and fish have demonstrated the carcinogenicity of 2-Acetylaminofluorene (2-AAF). Investigations into the mechanism whereby 2-Acetylaminofluorene exerts its carcinogenic effect have demonstrated that the N-hydroxylated metabolite, N-hydroxy-2-AAF, was produced in several animal species and was more carcinogenic than the parent compound. The National Cancer Institute (NCI) demonstrated that humans also metabolize this substance to the same carcinogenic metabolite. From these findings, it seems reasonable to conclude that 2-AAF, which has been shown to be carcinogenic in many animal species, is carcinogenic in man.

4-Aminodiphenyl. The potential of 4-Aminodiphenyl (4-ADP) to induce bladder cancer in humans has been established in epidemiologic studies conducted by Melick et al. and Koss et al. DeBmann & Radomski considered 4-ADP to possess a relative carcinogenic potential for the dog 6 times greater than that of beta-Naphthylamine, 17 times greater than that of 4-Nitrobiphenyl and 21 times greater than that of Benzidine. In addition, the carcinogenicity of 4-ADP has been well-established in the scientific literature with demonstrated potential for malignant tumor induction in rabbits and mice. The accumulated experimental and epidemiologic evidence have demonstrated 4-Aminodiphenyl may be the most hazardous aromatic amine regarding carcinogenic potential.

Benzidine. Benzidine was demonstrated to be carcinogenic in experimental animal investigations involving

ats, dogs, hamsters, and mice. Epidemiologic investigations of worker populations exposed to Benzidine have clearly demonstrated that this substance and its salts are also carcinogenic in humans. The incidence of urinary bladder cancer in workers exposed to Benzidine in these epidemiologic investigations greatly exceeded the incidence of this disease in the general population.

3,3'-Dichlorobenzidine. The determination that 3,3'-Dichlorobenzidine (DCB) is potentially carcinogenic for humans rests on the determination that DCB has been shown to be carcinogenic in controlled animal studies involving rats, mice and hamsters. A clearly defined and statistically significant worker population exposed to DCB only, in either the past or in the present, is difficult to ascertain. Existing worker populations have been either exposed to other listed chemical carcinogens in their past work experience or are presently being exposed to other suspect carcinogens in addition to DCB. Therefore, the case for the human carcinogenicity of DCB must rely on extrapolation to humans of the most pertinent animal studies of oncogenesis.

The studies by the NCI concerning the induction of tumors, significantly including bladder tumors in hamsters, and the studies by Pliss et al. concerning the induction of tumors in mice and rats present experimental evidence of tumor production in three animal species.

Although DCB has been detected in the urine of workers receiving a minimum of exposure, the metabolism of this substance is unclear, although it probably differs from that of other carcinogenic aromatic amines such as Benzidine and beta-Naphthylamine.

4-Dimethylaminoazobenzene. Numerous reports concerning carcinogenicity of 4-Dimethylaminoazobenzene (DAB) in experimental animals have been published. This substance was demonstrated to be carcinogenic in rats, dogs, neonatal mice and trout. The similarity in metabolism of various aromatic amines in dogs and humans, emphasizes the importance of the finding that DAB has been demonstrated carcinogenic for dogs.

alpha-Naphthylamine. The contamination of alpha-Naphthylamine (1-NA) by beta-Naphthylamine (2-NA) a potent carcinogen, and mixed occupational exposures involving 1-NA and other aromatic amines has confounded the epidemiologic conclusion that 1-NA is carcinogenic in man. Both 1-NA and 2-NA are readily metabolized to various derivatives, several of which have a demonstrated carcinogenic potential in experimental animals. The demonstration that a metabolite of 1-NA, N-Hydroxy-1-naphthylamine, possessed a greater carcinogenic potential than the corresponding 2-NA metabolite, N-Hydroxy-2-naphthylamine, emphasizes this consideration. In addition, the extensive epidemiologic study in the dyestuffs industry conducted by Case failed to eliminate an active role for 1-NA as a human bladder carcinogen.

beta-Naphthylamine. beta-Naphthylamine (2-NA) was demonstrated to in-

duce cancer of the urinary bladder in dogs, rhesus monkeys and hamsters. Tumors were induced in other organs of rats and mice exposed to 2-NA although attempts at tumor induction in rabbits was unsuccessful. Epidemiologic investigations of worker populations exposed to 2-NA clearly demonstrates that this substance is carcinogenic in humans.

4-Nitrobiphenyl. Because of the structural similarity of 4-Aminodiphenyl to 4-Nitrobiphenyl and the experimental evidence for *in vivo* formation of 4-Aminodiphenyl from 4-Nitrobiphenyl, the epidemiologic investigations published by Melick et al. and by Koss et al. are of special significance. These studies have demonstrated the potential of 4-Aminodiphenyl to induce urinary bladder cancer in humans. The case of the carcinogenicity of 4-Nitrobiphenyl is strongly supported by the induction of urinary bladder cancer in dogs, the evidence that 4-Nitrobiphenyl is metabolized, *in vivo*, to 4-Aminodiphenyl (a highly carcinogenic aromatic amine), and the possibility that the cases of human urinary bladder cancer attributed by Melick et al. to 4-Aminodiphenyl only, may have been induced by exposure to 4-Nitrobiphenyl as well.

N-Nitrosodimethylamine. The carcinogenicity of N-Nitrosodimethylamine (DMN) for the liver and kidney of the rat has been repeatedly demonstrated in experimental studies. In addition, primary tumors of the lungs have been induced in rats administered oral doses of DMN and inhalation of DMN has produced tumors of the nasal area. Other experimental animal investigations have demonstrated the carcinogenicity of DMN for the mouse, the hamster, the guinea pig, the rabbit and several species of fish. In view of this broad spectrum of carcinogenic activity in experimental animals, DMN must be regarded as potentially carcinogenic for man.

beta-Propiolactone. The carcinogenicity of beta-Propiolactone (BPL) has been demonstrated in mice by skin application, subcutaneous injection and intraperitoneal injection. Malignant tumors have been induced in rats by subcutaneous injection, intratracheal administration, and intragastric feeding. Skin application to hamsters induced a very high incidence of skin tumors. Although epidemiologic evidence demonstrating BPL to possess a carcinogenic potential for humans is not available, the weight of the experimental animal data indicates that BPL is also a carcinogen in humans.

bis(Chloromethyl)ether. Investigations with experimental animals (mice and rats) have demonstrated that bis(chloromethyl)ether (BCME) is a very hazardous carcinogenic substance. Skin application or subcutaneous injection of experimental animals has resulted in malignant lesions at the site of application or injection and in malignant tumors of the lungs. Of significance was the demonstration that 1 ppm or 0.1 ppm of BCME in air, induced lung cancer in mice or rats. Epidemiologic investigations conducted separately by the National Institute for Occupational Safety

and Health and others demonstrated that employee exposure to BCME is extremely hazardous with a high probability of lung cancer.

Chloromethyl Methyl ether. The results of investigations with experimental animals exposed to commercial grades of Chloromethyl methyl ether (CMME) have been inconclusive regarding the carcinogenicity of this substance because of contamination by small concentrations of the highly carcinogenic bis-derivative-bis(Chloromethyl)ether. However, experimental animal investigations involving chemically purified CMME have demonstrated that this substance possesses a carcinogenic potential.

Epidemiologic investigations reported in 1972 and in 1973 strongly implicated CMME as a human carcinogen, although concomitant exposure to BCME cannot be discounted.

4,4'-Methylene-bis(2-chloroaniline). The results of experimental animal studies involving rats and mice, as reported by three different groups of investigators, have clearly demonstrated a carcinogenic potential for 4,4'-Methylene-bis(2-chloroaniline). The results of two industrial studies involving workers exposed to 4,4'-Methylene-bis(2-chloroaniline) were not definitive and cannot be relied upon to assess the hazards of occupational exposure to this substance, although one of the studies reported that several exposed workers developed hematuria.

Ethyleneimine. The carcinogenic potential of ethyleneimine (EI) has been confirmed by a study conducted by Walpole in 1954 involving rats and one sponsored by the National Cancer Institute involving mice. In the first study, animals developed injection site sarcomas which the investigators attributed to the direct action of Ethyleneimine, and in the second study 80 percent of the animals developed tumors, including more than one-half with hepatomas (which the investigators stated had "malignant potentiality") and almost three-quarters with pulmonary tumors. Although high doses of EI were administered, the investigators stated there was no way to predict whether man would be more or less susceptible to tumor induction by EI.

The case for the carcinogenicity of EI, then, rests on the extrapolation to humans of the findings in two separate, controlled animal studies. This position is compatible with that of NIOSH concerning the prior demonstration of carcinogenicity in at least two animal studies.

A major question of occupational carcinogenesis relates to the extrapolation of results of animal experimentation to humans. The basis of numerous objections to the proposals is that, even assuming the validity of animal experiments, such do not furnish sufficient evidence that the substances involved are carcinogenic to humans. Extrapolation of results obtained by animal experimentation is alleged to be vitiated by several considerations: (a) That certain cancers are specific only to some species;

(b) that the conditions of animal experiments are out of proportion to, and not consistent with, conditions prevailing in industrial exposure; and (c) that no cancers have yet been detected in humans exposed to the substances. For those substances whose metabolism is understood, and is similar in both animals and man, the fact that they induce cancers in animals warrants the expectation that they will induce cancers in men. This applies to the substances which cause urinary bladder cancers in animals acting, not directly, but indirectly through the mediation of metabolites formed both in experimental animals and in exposed workers. This is also true of those substances which apparently require no metabolic alteration but attack a particular biologic system (e.g., respiratory tract, alimentary canal) which is similar in both animals and humans.

The objections raise the much broader issue of human exposure to a chemical which is only known to have caused cancers in experimental animals.

It is important to note that some opponents of the regulation of such chemicals do not advocate treating them as if they were harmless with respect to carcinogenic potential. Several employers, for instance insist that such substances must be treated with "care" or "respect," while also insisting that they call for significantly less protection than those substances known to be human carcinogens.

We think it improper to afford less protection to workers when exposed to substances found to be carcinogenic only in experimental animals. Once the carcinogenicity of a substance has been demonstrated in animal experiments, the practical regulatory alternatives are to consider them either non-carcinogenic or carcinogenic to humans, until evidence to the contrary is produced. The first alternative would logically require, not relaxed controls on exposure, but exclusion from regulation. The other alternative logically leads to the treatment of a substance as if it was known to be carcinogenic in man.

We agree with the Director of NIOSH, and the report of the Ad Hoc Committee on the Evaluation of Low Levels of Environmental Chemical Carcinogens to the Surgeon General, U.S. Public Health Service, April 22, 1970, that the second alternative is the responsible and correct one. This decision accords with the work practices of some who object to the proposed regulation. For example, although the Pharmaceutical Manufacturers Association argues for the exclusion of research laboratories from the standard, it states as its ground the fact that employees in Pharmaceutical research are taught to work with all chemicals under the assumption that they are dangerous, unless it is specifically known that they are not.

(3) *The petition, zero tolerance, and permit system.* The petition of Oil, Chemical and Atomic Workers Union (OCAW) and Health Research Group (HRG) for an emergency temporary standard on

ten substances proceeds on the assumption that any exposure to any amount of a carcinogenic substance must be prevented. Accordingly, it proposes a standard of zero tolerance permitting no exposure whatsoever. This objective would be accomplished by means of a permit system and frequent monitoring and reporting.

We agree with the Ad Hoc Committee on the Evaluation of Low Levels of Environmental Chemical Carcinogens that a safe level of human exposure to any of the 14 carcinogens cannot be established by application of present knowledge. But we are not prepared to draw from this state of knowledge the conclusion that such levels do not exist. First, it is the professional opinion of many knowledgeable people that as yet undetermined safe levels of exposure possibly do exist. Also, a conclusion that safe levels do not exist seems questionable in view of other studies, some in the area of carcinogenicity which demonstrated that below a certain amount of a single or cumulative dosage, no detectable harm is caused, or if harm is caused, the extent of such harm will be of no practicable importance because the latency period prior to manifestation of harmful effects will be of greater duration than the normal lifespan of man. Secondly, no possible exposure to the carcinogens under any circumstances could only be guaranteed by a total ban on the manufacture, use (even for cancer research), and transportation of the substances. As long as the substances are used, exposure to some amounts may occur because of breakdown of equipment or human error. Accordingly, the intent of the standards is to reduce exposure of workers to any of the listed substances to the maximum extent practicable consistent with continued use.

Numerous objections have challenged the authority for, and the administrative feasibility of, the permit system proposed on July 16, 1973 (38 FR 18902). It is argued, for instance, that the Act requires the promulgation of general standards, in accordance with the procedures prescribed in section 6 of the Act, while the proposed permits would be tailored to particular users, and would be issued by a different procedure.

Another objection argues that a permit system, to be effective, would require authority to stop an operation involving a carcinogen by administrative action, in contravention of the statutory scheme which contemplates judicial determinations resulting in the cessation of an operation.

With regard to feasibility, it is pointed out that a multitude of permits would be required, and that, therefore, the implementation of a permit system would require substantial resources and several years.

It has been made clear that there are numerous uses and processes involving carcinogens. It appears, for instance, that there are 800 to 1800 users of 4,4'-methylene bis(2-chloroaniline) alone. The investigations and evaluations of thousands of work situations involving

a carcinogen, and the completion of the procedures, possibly including hearings, for the granting of the permits, would require many years and the diversion of substantial resources, even if available, from other serious occupational safety and health problems.

After considering the administrative and legal aspects of a permit system, as against those of general standards enforced by the use of the current enforcement tools of the Act, the decision has been made not to adopt a permit system.

The requirement in the adopted standards for employers to report the uses of carcinogens and the nature of operations involved, together with incidents of releases of carcinogens, will permit significant administrative surveillance.

(4) *Mixtures.* The proposal for this rulemaking proceeding, like the Emergency Temporary Standard, excludes from the scope of the standard mixtures containing less than specified percentages of the 14 listed substances. The specific figure as a cutoff point derives from the regulations of the Commonwealth of Pennsylvania and England, which also regulate exposure to carcinogens, and apparently have faced the same administrative difficulties confronting OSHA. It is recognized that some of the carcinogens may be used in minute amounts with other substances, or may appear as unintended, undesired by-products or contaminants of processes. Some of the substances are used in minute amounts in cancer research laboratories, and for medical purposes. The College of American Pathologists, for instance, points out that for years pathology laboratories and physicians have used benzidine and/or benzidine dihydrochloride for diagnostic purposes. The American Home Products Corporation calls attention to the use of beta-Propiolactone for the sterilization of vaccines and tissue grafts. Koppers, Inc., requests an exemption in some form for materials, such as coal tar and coal tar products, that contain trace amounts of some carcinogens as by-products or contamination of processes essential to our industrial society. It states that the application of the proposed standard to crude mixtures, such as coal tar and coal tar products, without any exemption, would have the effect of closing down large segments of industry, such as steel-making, wood preserving, roofing, aluminum reduction, and possibly even power plants.

The adopted standards retain the proposed exclusion of solid or liquid mixtures containing less than 1 percent, by weight or volume, of eight of the carcinogens. Solid or liquid mixtures containing 4-Aminodiphenyl, Benzidine (and its salts), 4-Nitrobiphenyl, beta-Naphthylamine, bis-Chloromethyl ether and Methyl chloromethyl ether are excluded only if they contain less than 0.1 percent of those substances. Finally, an exemption is provided in the destructive distillation of carbonaceous materials, for alpha-Naphthylamine and beta-Naphthylamine, which may occur in such processes.

The overall purpose of all the exclusions is to avoid substantial obstruction, if not stoppage, of the use of many processes and products which are considered useful in industry and even in cancer research, and about which the record contains very little information. We do not know how many such products and processes there are, nor the availability of substitutes for all of the carcinogens involved, nor the effect of the other components of a mixture on the carcinogenic potentiality of the small amounts of the carcinogen involved. The exclusionary percentage for mixtures containing 4-Aminodiphenyl, Benzidine, 4-Nitrobiphenyl, beta-Naphthylamine, bis-Chloromethyl ether and Methyl chloromethyl ether has been lowered from 1 percent to 0.1 percent because these substances are known to be potent human carcinogens.

The exclusion for the destructive distillation of carbonaceous materials is for the purpose of avoiding the extreme consequences to the segments of the industry using vigorous thermal processes at a time when a separate standard-setting proceeding on coke oven emissions will afford the opportunity for a more in-depth consideration of this whole area (see 38 FR 26207). The exclusion of the mixtures rests, not on a finding that the mixtures are non-carcinogenic, but rather on a decision not to regulate them at this time, on the basis of the record of this proceeding.

(5) *Number of Standards Needed.* Another objection to the proposals is that the standard "lumps together" many different substances with different chemicals and physical properties, different physical states, different biological properties and different uses. There is merit in this objection. Accordingly, 14 standards are adopted, one for each substance listed in the proposal of July 16, 1973.

These standards recognize and provide for different uses and operations involving the regulated carcinogens. Ethyleneimine and beta-Propiolactone are immediately corrosive, and provisions are made in the standards for these materials for deluge showers and eye wash fountains, located near places where exposures might be expected. Principally volatile materials will not be present long enough for routine washing or showering to have effect as a protective measure. Thus, a requirement to wash on each exit, and shower at the end of the day, would not offer any significant protection to employees working in areas where the volatile materials, Methyl chloromethyl ether, bis-Chloromethyl ether, Ethyleneimine and beta-Propiolactone, are present in a closed system or closed system transfer operation. Trace amounts that might be adsorbed onto exposed skin vaporize long before the employee would routinely wash or shower. Wash requirements are retained for these materials in isolated system operations because the closed confinement of glove-box gloves would inhibit vaporization if a leak should occur.

Special provisions are made for premix operations involving 4,4 Methylene-bis

(2-chloroaniline) and liquid prepolymer. These premix solutions, frozen or otherwise, are packaged in such a manner and used only after the 4,4'-Methylene-bis(2-chloroaniline) and the prepolymer have started to react. No dust hazard exists and a vapor hazard is unlikely. For this reason, the standard requires only protective clothing such as smocks, coveralls, or long-sleeved shirts and pants, and gloves. This, we believe, will afford adequate protection for these workers.

On the other hand, some of the differences pointed out do not require different treatment. There are basically two strategies of control, regardless of the physical state of a carcinogen. One is to isolate the carcinogen and the other is to isolate the area of possible exposure. In cases of isolated systems, the physical state of a carcinogen may be disregarded for practical purposes. When a system is isolated and fully closed so that the substances cannot escape into the work environment, it does not matter if the substance in it is a solid, liquid, or gas. An isolated system achieved by engineering controls is the preferred approach and the basic approach adopted in the standards. That is, the preferred method of control is engineering control, such as by closed systems, mechanical seals, remote controls, and local exhaust ventilation. This approach most effectively isolates employees from potential contamination.

This is the reason for the ban on open vessel operations. Because of consideration of feasibility, special provisions are made for laboratory hoods and transfer point operations, and additional work practice requirements are made applicable to them.

When protection is afforded by means of personal protective equipment, it is thought best to require body coverage, regardless of the physical state of the substance and its path of travel into the body. The reason for such personal protection is that even if a substance is considered to do harm only when ingested or inhaled, it is prudent to provide protective garments to be discarded after use, so that a worker may not accidentally inhale or ingest contaminants adhering to his clothing or body. This precaution is reasonable, especially since the standards do not require full impervious air-supplied suits. OSHA agrees with the many comments that a full impervious air-supplied suit is cumbersome, while impervious garments with air-supplied hoods are adequate and more comfortable to the workers when used in accordance with the work practice provisions of these standards.

(6) *Research laboratories.* Numerous objections have been made to the proposal for identical treatment of industrial use and laboratory use of the carcinogens. There are essentially three objections: (a) That laboratories use very small amounts of the substances; (b) that work is done by, or under the direction of, highly trained personnel; and (c) that, in the absence of an exemption or other special consideration, the standard as proposed would obstruct,

and possibly even prevent much research including cancer research.

These objections are well-taken and special provisions are made applicable to laboratory activities. The provisions are derived from the Minimum Safety Guidelines for Research in Cancer (Part 1, For Research Involving Chemical Carcinogens), prepared in draft form by the Cancer Research Safety Committee of the National Cancer Institute. In addition, it is to be noted that the exclusion provisions for certain mixtures may, by themselves, make a whole standard inapplicable.

Personnel engaged in animal support activities must necessarily handle animals exposed in connection with experiments involving one or more of the carcinogens. Such support activities include the feeding of animals, cleaning of cages and the animal room, and caring for the animals, including weighing operations. Such close animal contact involves potential exposure both to a carcinogen and to metabolites of the carcinogen and therefore requires the more stringent controls for such personnel provided in the standards.

(7) *Signs and labels.* The controversy with regard to signs and labels centers on whether the word "cancer" should be used. We believe that a diluted form of warning will not suffice. We appreciate the concern of employers with the reactions of their employees and the users of their products. But we consider of paramount importance that a worker should be fully apprised and realize the possible risks involved in his occupation. The use of the word "suspect" in the phrase "Cancer-Suspect" follows the revised Emergency Temporary Standard issued July 27, 1973. Coupled with the information and training requirement in the standard, it appears to provide the necessary warning to employees.

(8) *Information and training.* Employers are responsible for providing indoctrination and training to their employees on the nature of the carcinogenic hazards in the establishment, and the precautions to be used when working with or in the presence of the carcinogens. Information on the training and education to be provided to employees is specified in each of the standards for a carcinogenic agent.

(9) *Monitoring.* No provisions for specific techniques or instruments for environmental monitoring are contained in the standards adopted. OSHA has requested NIOSH to develop, on a priority basis, methods for determining qualitative and quantitative amounts of the carcinogens in the workplace.

(10) *Medical surveillance.* Medical surveillance by a physician is required in the standards prior to assignment, at yearly intervals thereafter and whenever known or possible exposure to a carcinogen has occurred. Medical surveillance is considered necessary because of the long latency period inherent in occupational carcinogenesis, since initiation of exposure and induction of cancer are not synchronous events.

(11) **Reports and records.** The standards require reports concerning the use of carcinogens, the number of employees in regulated areas, and incidents resulting in the release of a carcinogen in an area where employees may be potentially exposed. The standards also require records of medical examinations of employees. The reports and records are considered necessary in order to monitor the effectiveness of the standards in protecting employees against occupational cancer and in order to obtain information, on a continuing basis, concerning the hazards found in the use of the carcinogens.

Accordingly, upon consideration of the whole record of this proceeding, 29 CFR Part 1910 is amended by revising § 1910.93c and by adding new §§ 1910.93d through 1910.93p, reading as follows:

§ 1910.93c 4-Nitrobiphenyl.

(a) **Scope and application.** (1) This section applies to any area in which 4-Nitrobiphenyl, Chemical Abstracts Service Registry Number 92933 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl.

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Nitrobiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Nitrobiphenyl where containment prevents the release of 4-Nitrobiphenyl into regulated areas, non-regulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Nitrobiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Nitrobiphenyl from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Nitrobiphenyl which may result in exposure to or contact with 4-Nitrobiphenyl.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Nitrobiphenyl, which is impervious to the passage of 4-Nitrobiphenyl, and which would prevent the entry of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Nitrobiphenyl within the hood does not require the insertion of any portion of any employees' body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Nitrobiphenyl in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Nitrobiphenyl into regulated areas, non-regulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Nitrobiphenyl.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) "Requirements for areas containing 4-Nitrobiphenyl." A regulated area shall be established by an employer where 4-Nitrobiphenyl is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4-Nitrobiphenyl within an isolated system such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4-Nitrobiphenyl is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Nitrobiphenyl is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined

in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4-Nitrobiphenyl is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Nitrobiphenyl handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4), of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with 4-Nitrobiphenyl could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

[Approximately 50 pages of detailed standards for individual compounds follow.]

STATEMENT

of the

COMMITTEE FOR ENVIRONMENTAL QUALITY
New Jersey Business & Industry Association

to the

SENATE COMMISSION ON THE INCIDENCE OF CANCER

RE: Economic Impact of Senate Bill 3035

Public Hearing: February 18, 1977

Senator Skevin, members of the Senate Commission on the Incidence of Cancer, my name is Robert C. Locke, Chairman of the Committee for Environmental Quality of the New Jersey Business and Industry Association. We appreciate the invitation to present our views on the subject of the economic impact of proposed cancer control legislation, Senate bill 3035.

Manufacturing employers are concerned about the conditions for health in New Jersey just as all other responsible citizens of this state should be. As people in management, we are as susceptible to the threats of a vicious killer like cancer as anyone else. As employers, we have a vested interest in protecting the health and lives of our employees.

No manufacturer, therefore, with definitive proof of a carcinogen's existence and threat to the community would continue to produce it in a manner likely to pose a risk to its employees or to the public.

In addition to this concern for the health of employees and the public, industrial employers have another significant responsibility. We must continue to provide a very precious commodity to three-quarters of a million people in this state: jobs. Under present-day circumstances -- with New Jersey's having lost almost one out of every five factory jobs since August 1969 -- we can agree that this is by no means easy. (NOTE: For your information, we respectfully attach a copy of a report prepared by the Fantus Company regarding New Jersey's economic climate. This report was commissioned by New Jersey Manufacturers Insurance Company).

In view of this, we must consider two issues posed by this legislation. First, is the proposal the most effective way to achieve the desired results, i.e. a significant reduction in the state's cancer rate; and second, to what extent will this approach have a disruptive effect on jobs and the state's economy?

A REDUCED CANCER RATE?

We think it important to set the record straight. Of the large number of cases of cancer mortality in New Jersey, it has been estimated that only a small percentage could in any way be connected to the person's exposure to carcinogens in the workplace (600 out of 14,000 cases, per Dr. Harry Demopoulous, former Chief of the New Jersey Cancer Institute).

We also note that while it is commonly agreed among cancer experts that about 80% of all cancers can be said to be caused by "environmental factors," the term "environmental" is all too often interpreted to mean industrial pollution. Such environmental factors actually include diet, smoking, automotive emissions, proximity to urban centers, cosmic and solar radiation and lifestyle as well as chemical agents, both natural and manufactured. Cigarette smoking alone is thought to be responsible for up to 40% of all cancers!

Therefore, what S-3035 addresses itself to is perhaps at best some 5% to 10% of the total probable causes of cancers. (State Department of Environmental Protection has not disputed this estimate.) Not that 10% shouldn't be dealt with, on the contrary. But the public should not be misled into believing that controlling industrial emissions will completely solve the problem.

We question the efficacy of the State of New Jersey becoming involved in the cancer control business. There is no real chance that New Jersey, by itself, can do a job attempted by federal and other programs which are supported by much more money and available expertise. New Jersey's \$1 million

cannot hope to be of any real significance considering the hundreds of millions of dollars already committed to the control of cancer nationwide. Shouldn't we instead be promoting an all-out regional and nationwide effort?

We respectfully call your attention to the recently-enacted federal Toxic Substances Control Act (PL 94469) which contains provisions for the regulation of the manufacture and use of those chemical substances whose occurrence in the environment would pose an unreasonable risk to human health. This law includes the authority to ban the manufacture or use of a chemical substance! The law itself, however, does not attempt to list specific substances for banning. It leaves that responsibility to the experts.

Furthermore, employees in New Jersey industries are protected by strict standards of allowable exposure to suspected hazardous substances in a program administered by the federal Occupational Safety and Health Administration. A ban on these OSHA classified hazardous substances -- which are regulated on a nationwide basis -- would appear to be unnecessary.

IMPACT ON THE ECONOMY

While the positive impact of S-3035 on the state's cancer rate is likely to be relatively small, the adverse economic impact is estimated to be far out of proportion to those benefits.

We regret that we are not able to predict with any degree of certainty just what the economic impact would be. Initial inquiries, however, indicate that the effects could well be catastrophic. It is not inconceivable that the entire petrochemical industry -- with its 122,000 jobs in New Jersey and billions of dollars in payroll -- would be placed in great peril.

The prohibition of the manufacture, production and use of vinyl chloride, for example, would immediately prejudice employment opportunities for at least the 2,000 people working for companies in the direct production of the raw material. Add to this figure the number of facilities which use the material in the production of other products, and the number of job opportunities likely to be affected increases dramatically. The manufacture of plastics, fiberglass and countless other products now used by millions would have to take place in other locations throughout the country. Until facilities in other states could take on the added production capabilities, severe economic disruptions would occur in these areas, too. In short, the "ripple effect" could be of great magnitude, not only in New Jersey, but nationwide.

Consider, too, the effect of S-3035 on the state's glass manufacturing industry. This industry, of course, has been the recipient of much attention as the state seeks to prevent its total flight -- and the jobs represented -- from New Jersey. Asbestos is used widely in the handling of hot ware. The phase-out of asbestos from these uses (where little, if any, health hazard exists) could in no way be accomplished immediately as proposed in this bill. The only means of compliance would be to cease production. Another stoppage in production without significant health gains would clearly not be in the best interests of the state's economic health much less that of the thousands of employees affected.

We regret that we cannot supply this commission with more details regarding the economic impact per se on given industries. If the information is available, it would take time to develop. The countless ways in which the products listed for prohibition are used make the task almost impossible.

PROVISIONS OF S-3035

Some specific comments regarding S-3035 would seem to be in order at this time.

Section 3.b. The definition of "carcinogens" is overly broad. As written, it would include the more than 1,500 substances listed by the National Institute of Occupational Safety and Health (NIOSH) which list is highly suspect, there having been no critical, scientific basis for many of the substances' inclusion. We suggest that only "proven human carcinogens" be included.

Any list to be prepared should be done so in conjunction with the National Cancer Institute or other organizations with greater experience in this field.

Section 6. In this section the state legislature enters the province more properly assigned to expert technical and administrative agencies. We seriously question the advisability of this proposed action, for the legislature would be assuming for itself a function it had previously delegated to the Department of Environmental Protection.

Section 7. The make-up of the Cancer Control Council appears to create a potential self-serving situation on the part of the heads of the two regulatory agencies (Environmental Protection and Health) charged with enforcing the proposed Act. As this Council should be provided the maximum possible independence of operation, representatives from the two departments should serve in an advisory capacity only.

We further suggest that the four Council members to be appointed by the Governor be representative of 4 distinct communities. Representatives should be selected from the following: one graduate industrial toxicologist; one Doctor of Medicine, specializing in cancer treatment; one environmentalist from the Sierra Club, League for Conservation Legislation or League of Women's Voters, etc.; and one engineer from the chemical industry to be nominated jointly by the New Jersey Business and Industry Association and the New Jersey State Chamber of Commerce.

Section 9. Included in this section is direction to "conduct continuing epidemiological studies to establish a causal relationship between a suspect carcinogenic substance and cancer..." We approve of this as a scientific approach to the control of cancer. Realistically, however, we suggest that New Jersey's efforts be made a part of a nationwide effort to scientifically isolate those cancer-causing substances, determine what, if any, levels can be considered safe and impose controls which will safeguard human health while not unduly jeopardizing human endeavors,-- i.e. jobs.

It is a fact of life that too much of almost anything -- oxygen, for example, -- can be lethal. Some chemicals will prove to be carcinogenic to animals but only when fed large doses (relative to weight relationship, etc.) For example, benzene which has been in commercial use for 75 years is suspected of being a carcinogen. It can, however, be demonstrated that prudent use by human beings has not caused cancer. It is also present in gasoline in small quantities. Clearly, banning this chemical would be deleterious to civilization's standard of living. Instead, safe levels of such products should be sought and established.

Furthermore, the presence of a suspected carcinogen as part of a harmless chemical combination in a product would pose no danger to the environment or to human health. Where this is the case -- as in the use of plastics containing vinyl chloride -- emphasis should be instead placed on the proper disposal of such products.

We wish to go on record as being in full support of the concept of a statewide cancer registry requiring physicians to report to a central source all cases of cancer (S-1758). With these data, the causes and cures of the disease can be better understood.

We also support the concept of more cancer research in New Jersey as part of a regional or national program and the development of better treatment through community hospitals (S-3034). This is essential for the early detection and treatment of cancer. This would not only be fiscally sound, but would guarantee that available funds are most effectively utilized.

CONCLUSION: The Committee for Environmental Quality would support the Department of Environmental Protection in its efforts to control the production and use of any substance known to be carcinogenic. As responsible corporate citizens (and human beings), we could do no less. We cannot, however, support any attempt to legislate the prohibition of any specific substances as proposed in S-3035. Our responsibility to the 13,000 member companies of NJBIA, the jobs at stake and the economy of the State of New Jersey dictates this position.

We again thank you for this opportunity to present our views.

* * * * *

R. Lee Clark and Frank J. Rauscher

The Wash Post
May 12, 1977

Cancer: A Search for Both Cures and Causes

An article that appeared in The Washington Post May 1 accused the American Cancer Society of focusing on the search for cures rather than on environmental causes. The society does indeed focus on early diagnosis and cures to save lives from cancer; the allegation regarding the society's negligence of environmental causes is entirely untrue.

As for cures: There are nearly 700,000 new cases of cancer in this country each year, and about 385,000 cancer deaths—more than 1,000 a day, one

Dr. Clark, president of the American Cancer Society, is president of M. D. Anderson Hospital and Tumor Institute, University of Texas System Cancer Center. Dr. Rauscher, senior vice president for research of the Society, is the former director of the National Cancer Institute.

every one and one-half minutes. As an organization started and directed by volunteers to fight cancer, and supported by public contributions, it is obviously our first priority to do everything we can to reduce this intolerable toll. And we are succeeding.

Through public and professional education we have changed the attitude toward cancer—the vital first step—from one of hopeless passivity to one of active combat. And, partly as a result of this, and through continued research—in which we have invested more than \$400 million—tens of thousands of lives have been saved from cancer in the United States over the past two decades. That is, whereas only one in four patients was cured of cancer in the 1950s, today one in three is being cured. And science and medicine already have

the knowledge and techniques to cure at least 50 per cent of all cancer patients.

The article also stated that "environmental sources" account for between 50 and 90 per cent of all cancers. This general concept, with which we agree, was put forth more than 10 years ago by the American Cancer Society and responsible scientists in France and England.

However, to many (such as the writers of the Post article) the word "environment" in this context signifies dangerous chemicals in our air, food and water. And the percentages are only estimates.

Actually, the real meaning of the concept is that many cancers are extrinsically induced and are related to our health habits and ways of life, as well as to things beyond our personal control.

The leading cause of cancer deaths in the United States is clearly extrinsically induced—from smoking cigarettes. They are now implicated in 35 to 40 per cent of all U.S. male cancer deaths—and to an even larger percentage in England and Finland. This includes not only lung cancer, the largest cause of cancer deaths (85,000 this year in the United States, of which about 70,000—mostly men—are directly related to smoking) but also cancers of the lip, tongue, larynx, esophagus, stomach, bladder and possibly pancreas, adding an additional 30,000 to 40,000 cancer deaths a year. Smoking, of course, involves conscious behavior, which can be changed—and cancers thus eliminated.

A portion of other cancers may also be extrinsically related to the kinds of food we eat. So far, the most likely culprit is the high-animal-fat diet, which is also implicated in abnormal blood cholesterol and heart attacks.

There is no evidence to implicate food preservatives or additives now on the market in human cancer; if there

were, these would automatically be removed under the Delaney clause or other provisions of the Food, Drug and Cosmetic Act.

Thus, smoking and perhaps diet are related to one-half to three-quarters of all killing cancers in this country (we except the 300,000 or so skin cancers caused by overexposure to the sun, 95 per cent of which are curable).

What about other cancers in the United States? Between 1 and 2 per cent occur because of intense exposure to carcinogens in the workplace; an estimated 3 per cent are related to long-term exposure in the general environment; perhaps 5 per cent are related to

Taking Exception

the use of medications in controlling deadly human diseases.

As for our other cancers, we have no clue to the proximate cause. Only research can provide answers.

The American Cancer Society has led the fight against known carcinogens "in the environment." It was ACS research that first identified cigarettes as a leading cause of cancer. And the society's record of courageous follow-through on this information in educating the public in the teeth of opposition from the powerful tobacco interests needs no reiteration.

The same attitude guides the society in finding and eliminating other known causes of cancer. It was ACS research that helped identify asbestos and polyvinyl chloride as carcinogenic dangers to workers. And it was ACS activism with the involved companies and trade unions that helped to lead to control of these dangers.

Despite this clear record of vigorous public service the Post article makes

the false allegation that the society's national board of directors is supposedly controlled by industrialists and bankers who direct the society's activities away from prevention, which, according to the article, would damage their economic interests.

The facts and record clearly refute these untruths.

The board of directors of the American Cancer Society, under our by-laws, includes 50 per cent physicians, scientists and other professionals; and 50 per cent laymen.

At present there is no industrialist and only one representative of a major bank on our board. The names selected by the writers of the Post article as evidence of corporate control are honorary life members, who have no vote.

An examination of our finances shows that of our total income, only 2.9 per cent comes from corporate gifts.

We are proud that some businessmen and lawyers are among those with enough community responsibility to volunteer for society work and that some have been elected by their fellow volunteers to our national board. If they choose to join in this crusade against cancer, their public spirit should be praised. Many contribute organizational and financial expertise to help make the cancer society a more effective organization.

The society's policies are based solely on scientific and medical knowledge; no individual or group in our organization could direct our energies away from any supposedly "sensitive" area. Nor in any way does the society direct the affairs or determine the priorities of the National Cancer Institute. We cooperate very closely and will continue to do so in all ways that will contribute to greater people benefit and in ways that will continue to eliminate undesirable duplication.

SUBMITTED BY THOMAS C. ROONEY, JR.

STATEMENT BY
BERGEN COUNTY CHAMBER OF COMMERCE
ON SENATE BILL S-3035 BEFORE
N.J. SENATE COMMITTEE HEARING
JUNE 24, 1977

The Bergen County Chamber of Commerce shares the concern everyone has for cancer. We shall support any legislation which will provide a reasonable and rational approach to eradicating this dread disease. Unfortunately, S-3035 has elements in it which prevent us from supporting the bill as it is written.

The Chamber is especially concerned with two particular areas which are currently impacting the social and economic welfare of the State of New Jersey. Specifically, these two areas are: 1) Cancerphobia or the overwhelming anxiety about cancer and its results; 2) The duplication of effort by all levels of government in an attempt to reduce the possibility of cancer.

"Cancerphobia," a term used by Dr. Elizabeth M. Whelan of Harvard School of Public Health, results in anxiety, fear, anger, frustration, distrust, panic, irrational and unsubstantiated talk and behavior, and occasional emotional outburst. Such a phobia is detrimental to the mental health of the public. Cancerphobia has led to proposed state regulations which can be determined either unreasonable or an infringement on or duplication of the efforts of other levels of government. Such proposed state regulations will have a negative impact on the social and economic quality of life in the state. Cancerphobia caused the State of New Jersey to be unjustly and irresponsibly labelled "Cancer Alley." Such a label has given our state a massive blackmark nationally.

In an attempt to refute the "cancer alley" label, we refer you to a report prepared for the New Jersey Chamber of Commerce by Dr.

H. B. Demopoulis, Director of the Cancer Institute of New Jersey,

entitled "A Rational View of Cancer in New Jersey."

This report points out that the rate of cancer in New Jersey is no worse than the rates in other comparably urbanized areas -- New York City, Westchester and Nassau Counties, San Francisco, Philadelphia, Chicago, St. Louis, etc.

It also points out a number of other interesting facts, including the importance of personal habits and life styles as causes of cancer. Nearly half of all cancers are caused by use of tobacco, alcohol or high fat/low fibre diets -- or combinations thereof. Further, it notes that only about 4 percent of all cancers in New Jersey can be industry-related. He makes the distinction between these causes and industrial pollutants, placing the latter as the cause of less than 1 percent of all cancers reported.

It is a cruel hoax to suggest that elimination of certain chemicals or environmental pollutants will result in elimination of cancer. Fortunately, the ban originally included as paragraph six in S-3035 was opposed by a solid coalition of organized labor, environmentalists, the medical profession and industry. It was withdrawn by the sponsor of the bill; however, other provisions which still remain may permit reinstitution of a comparable prohibition at some future time. These, too, should be eliminated -- specifically the so-called Cancer Control Council, which is a duplication of the responsibilities of the Department of Health and the Department of Environmental Protection.

The economic community, which provides for the material well being of the citizens of the state, has already been affected by the "cancer alley" label and the threat of legislated regulation of the use of various substances whose possible danger to the public health is only speculation. If this attitude is allowed to continue; if loose-talk

prevails; if cancerphobia were permitted to direct our thoughts and actions; then, many other industries will be greatly impacted if irresponsible and irrational legislation is enacted -- not only companies currently in the state, but those considering a move to New Jersey.

For instance, 146 chemical plants producing vinyl chloride would be shut, resulting in the loss of: 25,640 jobs; \$481 million in payrolls; \$11 million in local taxes; \$17 million in state taxes; \$529 million in purchase payments to various suppliers; \$1 billion from the economy of the state. This would be the result of the banning of the production of one chemical when danger to human health is still unknown. The impact of similar bans would have some multiple impact.

Another industry greatly impacted by cancerphobia is pharmaceuticals. Again, banning substances suspected to be carcinogenic would jeopardize approximately 20,000 research and development jobs in the state. New Jersey leads the nation in pharmaceutical research, with \$340 million invested annually in R&D programs. Unchecked, cancerphobia could lose for New Jersey not only these research dollars and jobs, but the pharmaceutical industry's \$825 million annual payroll and \$47 million in taxes.

The "phobia" is based on information that is completely out of date. Cancer does not occur overnight. It takes many years in most cases. Therefore, the statistics on which cancerphobia is based were derived from mortality data based on working conditions, life styles, medical practices and industry practices of the 1930's and 40's. Information gathering was often inaccurate and incomplete. Much has happened between then and now.

The Bergen County Chamber of Commerce's second concern is the confusion and duplication of effort by various levels of government.

The Federal Government has two agencies directly concerned with the health, safety and quality of life of the American public. OSHA (Occupational Safety and Health Administration) is charged with the responsibility of protecting workers on the job. The EPA (Environmental Protection Agency) protects the general public outside the work place. EPA, under the Toxic Substances Control Act, is currently attempting to determine which of a possible twenty-thousand substances might be carcinogenic. To date they have identified fifty possible candidates and will begin testing.

Only 47 laboratories across the country are equipped to do such testing. To duplicate conditions under which human beings may be exposed is practically impossible. So approximately 500 animals are tested for approximately 3-1/2 years at a cost of \$750,000 per test. These tests are not considered necessarily reliable.

For every level of every state and local government to provide for agencies to proceed with such tests of questionable validity is an irresponsible abuse of the public's interest and resources. Studies and experiments are provided for under federal legislation. Individual researchers and industry grants are also applying considerable effort toward protection and cure of cancer. The Federal Government should be permitted to carry out such research. Cancer knows no state boundaries.

The Bergen County Chamber of Commerce supports the establishment of a cancer registry in similar format to the Federal Register, so that accurate information about the disease might be gathered.

As to precisely how this Register should be kept and by whom, we do not know; however, full discretion should be maintained and the particulars of the information should be limited so that reporting and collating information does not become excessive. The Chamber further supports a program of early detection, so that early diagnosis can be achieved. Through such diagnosis, the possibility of cures via known treatments is greatly increased.

Cancer cannot be legislated out of existence. It is far more complicated than that. We need a strong state economy to do our part to search for a cure to the nation's second greatest cause of non-violent death. Proper and thoughtful legislation and prohibitions and support of cancer research can enable New Jersey to make a valuable contribution to achieving the cure for cancer which we all seek.

* * *

CANCERPHOBIA

BY DR. ELIZABETH M. WHELAN

HARPER'S
BAZAAR

April 1977

Cancer is a very big threat to everyone, but millions of Americans are worrying about the wrong things. So here we tell you what are real cancer dangers and what are merely hypothetical risks. We also tell you what preventive measures you can take to protect yourself.

Americans are in the grip of a new disease. The symptoms include anxiety, distrust, fear and occasional anger, resentment, panic and emotional outbursts. Susceptibility is nearly universal—old, young, male, female, highly educated or not. Generally transmitted by unsettling books, articles, newspaper headlines and television shows about ill health in America, the malady is cancerphobia. And if it continues to spread,

it will ultimately hurt all of us.

There is, of course, a real basis for concern—indeed, anxiety—about cancer and one's own chances of developing it. One in four Americans alive today will eventually suffer from this disease. But many cancer facts are now being distorted and a bad situation is being made much worse because of a growing misunderstanding about risks and underlying causes.

Specifically, after following media accounts on the subject, some people have become convinced that everything causes cancer these days, that we are the prey of a cancer epidemic produced by industry, at the mercy of innumerable chemicals over which we have no personal control. The result, cancerphobia, is as serious a threat to society as the disease is to the individual; it not only confuses us in setting priorities to increase our chances of living a long, productive life, but also distracts cancer re- (CONTINUED ON PAGE 154)

CANCERPHOBIA

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searchers, leading them to spend their limited time and money on areas unlikely to yield clues for the prevention and treatment of cancer. The only remedy for cancer-phobia is reason—and a hefty dose of facts to neutralize the cancer rumors which now surround us.

● IS THE U.S. NUMBER ONE?

With all the attention being given today to cancer, it's easy to understand how some have come to believe the frequent claims that "the U.S. is No. 1 in cancer" and that "your chances of developing some form of the disease are higher here than any place in the world." But actually we are not No. 1 in cancer. According to the World Health Statistics Annual, the U.S. ranks 19th in its cancer death rate for men and 18th for women. Because cancer cases, unlike many infectious diseases, do not have to be reported to any central office, there are no hard and fast national figures on the number of people who develop cancer each year (as opposed to the number who die from it). But local studies of cancer incidence again suggest that the U.S. is about average for a country with its lifestyle.

● IN THE GRIP OF AN EPIDEMIC?

Another common premise of cancerphobias is that the cancer death rate in our country is rising alarmingly. Again, this is not true. Certainly, the number of people dying from various forms of cancer is very much higher today than it was at the turn of the century. But the life expectancy for the average man and woman was much lower back then. For instance, a white male born between 1900 and 1902 could, at the time of birth, expect to live only about 48 years. Today, the life expectancy at birth for males is 68 years—and for women, 76. Men and women born early in the century generally died from scarlet fever,

whooping cough, diphtheria, pneumonia, influenza or tuberculosis before cancer had a chance to affect them.

But even more important in evaluating cancer trends is the fact that only one form of cancer has increased significantly in the past four decades: lung cancer. The death rate from lung cancer among American men has increased more than 20 times since the early 1930s, and is steadily rising among women. As for breast cancer, the American Cancer Society tells us that there is "no great difference in breast cancer mortality in the past 50 years." Furthermore, there have been "only slight" changes in the rates of colon-rectum cancer during recent years, a steady decrease in the death rate from uterine cancer and a very significant decline in stomach cancer mortality. Were it not for the upsurge in lung cancer deaths brought about by the tremendous growth of cigarette smoking since World War I, the overall cancer death rate in this country would be declining.

● CANCER AND THE ENVIRONMENT

One of the popular clichés of our cancerphobic society is that "80 to 90 per cent of cancer is environmentally caused". Understandably, when you hear that, you may picture polluted streams and city air, contaminated workplaces, fields being sprayed with insecticides and food labels with a string of unpronounceable names. This reaction is probably due to media reports that have taken "environmentally caused" to mean "caused by environmental pollution", as if they were synonymous.

In fact, however, what public-health specialists mean by "environment" includes factors such as smoking and imprudent dietary habits (eating overly rich foods high in cholesterol and saturated fats), which cause perhaps 60 or 70 per cent of all cancer deaths in this country.

Other "environmental" factors: Between one and three per cent of cancers (oral, esophagus, possibly liver) are the result of excessive alcohol use; another one to five per cent (cancer of the cervix)

are due to poor sexual hygiene; and another one to five percent stem from natural (energy in the atmosphere) and manmade (atomic testing) background radiation, which would affect a number of body sites. Occupational and drug-induced cancer together may account for two or three per cent of all human cancers and affect only small, specific groups of people—those exposed to high levels of industrial chemicals or drugs over long periods of time. Food additives, pesticide residues and general "pollution" have never been shown to cause human cancer.

Given these figures, you can see where the real priorities should lie and how we should be modifying our lifestyles to minimize our chances of becoming cancer victims. Unfortunately, contemporary cancerphobia is not based on real cancer risks, but on hypothetical ones.

● RUMOR VS. FACT

Perhaps cancerphobia is an inevitable consequence of our new openness about discussing the disease. As recently as 10 years ago, cancer was not a word that appeared very frequently in the headlines. It was hardly ever the subject of an hour-long television show or a topic covered in depth in a popular magazine. Now, almost daily, we hear or read about some "cancer-causing agent" or a "spectacular breakthrough" in the "war" against cancer. Any news about the disease, no matter how trivial or premature, is ipso facto sensational.

The key problem here is that many readers, viewers and listeners, lacking formal scientific background, are unable to put these daily reports in perspective. Reading that Red Dye #2, nitrates and nitrites, certain pesticides or plastic products "cause cancer", they may overlook the fact that these reports are based solely on a few animal experiments or on the experiences of a small number of individuals.

"Cancer risks" such as food additives, chemicals in plastic products, microwave ovens, toothpaste, photocopying ma-

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CANCERPHOBIA

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chines, aluminum cooking ware, fluoridated drinking water—the list of substances which at one time or another have been "suspect" is almost limitless—are purely conjectural. No member of the general public has, ever, to our knowledge, developed cancer from exposure to these products or substances.

The classic symptoms of American cancerphobia are the inability to dis-

tinguish between real and hypothetical risks, and the willingness—sometimes eagerness—to accept a rumor or the sketchiest scientific commentary about "cancer-causing agents". The cure for this malady is clear: We must acknowledge that while we do have a great deal to learn about cancer causation and how to reduce its terrible toll, we are not dealing with a "riddle wrapped in a mystery inside an enigma", as those promoting cancerphobia might lead us to believe. We are not surrounded by carcinogens, helpless victims of modern society. The

major cancer risks have been identified. We can fight both cancer and cancerphobia through reason, common sense and an ongoing effort to ensure that today's cancer headlines or rumors do not overshadow today's cancer facts.

EDITOR'S NOTE: Elizabeth M. Whelan, S.D., is a Research Associate at the Harvard School of Public Health, the co-author (with Dr. Frederick J. Stare) of *Panic In The Pantry* (Atheneum), and the author of a forthcoming book *How To Avoid Cancer*.

SUBMITTED BY JOHN H. WEBER

Testimony of John H. Weber, Air Quality-Transportation Control Program, City of Newark, Before The New Jersey State Senate's Commission on Cancer, June 24, 1977, Regarding the Proposed Cancer Control Act (S-30 35).

Good morning. My name is John Weber and I am from the City of Newark's Air Quality-Transportation Control program. Thank you for the opportunity to testify at this hearing.

The topic that is being discussed at this hearing today has gained statewide attention during the past several months. The tremendous controversy associated with the cancer issue in New Jersey, is still, for the most part, unresolved. The Cancer Control Act (S-3035) which Senator Skevin is proposing, is an initial step in the right direction to alleviate the hazard that carcinogenic substances pose here in New Jersey. The intent of this bill is not to shut down the chemical industry in New Jersey, but rather to carefully regulate the carcinogenic emissions so that the environmental rights of New Jersey citizens are not compromised. We believe these two views to be compatible.

Our office strongly supports the view of the Senate Commission on the Incidence of Cancer which states, "Chemical substances should be judged guilty until proven innocent, with the burden of proof on the chemical and the benefit of the doubt extended to the people." To do otherwise is an injustice to the people we are responsible for protecting.

The critical themes in the debate are the degree of protection needed and the actual risk imposed by carcinogenic substances utilized or emitted by industries in New Jersey. This controversy has arisen because of conflicting laboratory findings, insufficient data, unknown factors, synergistic effects and a multiplicity of other factors. The multifaceted components of cancer etiology will probably not be fully unraveled for several decades. The question we face today is whether we can afford to wait that long before taking definitive action. Based on the current statistics and other information already available, it seems incumbent upon the state of New Jersey to initiate firm action whenever possible to reduce the risk of exposure to carcinogenic substances. It would be relatively easy for New Jersey to hopefully await federal action on these same issues; however, how long this may take is uncertain.

The impetus for the bill that is before us had its origin in the cancer statistics published in an atlas format by the National Cancer Institute. Since that time, a scramble for clues and causes of cancer has taken place throughout the state.

One of the reasons for some of the confusion has been the use of the term "environmental carcinogen." In the midst of all the publicity, there has been a tendency to use this term interchangeably with "industrial carcinogen", implying a synonymous relationship. Indeed, they are not. Exactly what percent of the environmental carcinogens are also industrial carcinogens is not yet clear.

Reflecting on the cancer rates, we find that perhaps five percent of the deaths are attributable to industry. Some sources place the figure considerably higher. In either case, the exact figure is not really of paramount concern here. The purpose of S-3035 is to reduce the risk and subsequently the death rate from cancer by minimizing the risk imposed by industrial carcinogens whether it is a five percent or twenty five percent contribution to the total death rate.

One of the better indicators for occupational cancer influences was published by the National Cancer Institute under the title, "Cancer Mortality in U.S. Counties With Chemical Industries". In this study a total of 139 United States counties that had a high percentage of their working force employed in the chemical industries were examined with regard to mortality rates for lung, liver and bladder cancers. For New Jersey, Middlesex County was identified in an analysis of counties found to be at "high risk" for lung cancer. For bladder cancer, four (4) New Jersey counties fell into the high risk group: Gloucester, Passaic, Salem and Union. All of these counties have a sizeable portion of their work force employed by the chemical industry. Furthermore, the occupational component is more clearly defined since the excess deaths (i.e., those over the national average) were almost exclusively restricted to the male population. The authors attribute these excess deaths to occupational factors and identify specific types of industries where the cancer risk is high.

These types of studies together with other investigations on specific carcinogens have repeatedly pointed toward an occupational hazard with many industrial carcinogens. The recent emergency regulations promulgated by OSHA concerning benzene exposure in the workplace are consistent with this trend. In fact, all of the carcinogens listed by OSHA have been regulated because of occupational hazards.

One of the special concerns pertaining to carcinogenic substances is the synergistic effects associated with many of them. During the past ten years this phenomenon has been well documented for cigarette smoking and exposure to asbestos. Undoubtedly, similar types of relationships will be found between smoking and many other carcinogenic substances both in the workplace and ambient air.

The action taken by the Department of Environmental Protection (DEP) and the Department of Health (DOH) under sections four and five respectively of the proposed bill should be directed toward a common goal of zero emissions for known carcinogenic substances and a substantial reduction in exposure for probable carcinogenic agents.

Unfortunately, the present federal regulations administered through OSHA deal only with occupational exposure. The associated air emissions are being dealt with to a limited extent by the Environmental Protection Agency (EPA) under section 112 of the Clean Air Act which regulates hazardous air pollutants.

At the present time only four (4) such pollutants are controlled by these regulations: mercury, asbestos, beryllium and vinyl chloride; the last three being probable carcinogens.

There is a continuing need to intensify DEP's program of reducing carcinogenic air emissions. DEP took a first step in this area by proposing regulations for a ban on spray-on asbestos this past March. Regulations are still needed for a host of other carcinogenic materials which are being emitted daily throughout New Jersey.

The mechanisms for controlling carcinogenic air emissions will take several forms. The primary goal of all action taken under the bill should be to reduce the general public's exposure to carcinogenic air emissions. For the industrial sector a ban would not be necessary if emission control could be obtained via: product substitution, manufacturing process alterations, or, end point air pollution control systems. In some cases this policy might have to be altered if the ultimate user of a carcinogenic material or product is a consumer rather than industry. For example, trichloroethylene, one of the materials on DEP's list of carcinogens, can be readily purchased in gallon cans at the local hardware store. In this case a ban only on direct consumer usage might be deemed necessary since no other means of effective control would be applicable at that level.

In the City of Newark there are several companies which presently emit benzene, cadmium, chloroform, trichloroethylene

and vinyl chloride. All of these substances have been included on DEP's list of "selected environmental carcinogens". In addition, tank farms storing thousands of gallons of benzene and trichloroethylene etc., are also adding to the burden via evaporative losses. DEP has partially controlled storage tank emissions under its regulations for volatile organic liquid storage, subchapter 16; however, more stringent criteria needs to be established for those substances which have been designated as carcinogens.

To achieve all of these goals, passage of S-3035 is needed to gain the funds and authority for DEP and DOH to effectively function in the control of carcinogenic substances. We, therefore, concur with the concepts contained in the Cancer Control Act and recommend its passage. Thank you.

BEFORE THE
COMMITTEE OF ENERGY AND ENVIRONMENT
STATE OF NEW JERSEY

SENATE BILL, NO. S-3035
"CANCER CONTROL ACT"

TRENTON, NJ

JUNE 24, 1977

BASS TRANSPORTATION CO. INC.

TESTIMONY OF DR. LEO Y. SELESNICK
IN BEHALF OF BASS TRANSPORTATION CO. INC.
IN OPPOSITION TO S-3035

My name is Dr. Leo Y. Selesnick, and I am Chairman of the Board of Bass Transportation Co. Inc. referred to hereafter as Bass. My business address is P. O. Box 391, Flemington, NJ 08822. Our company was founded approximately 13 years ago by myself. I am familiar with the daily operations of Bass as a motor common carrier and as a motor contract carrier as to the services offered to our customers.

Bass presently operates in interstate or foreign commerce and in New Jersey intrastate commerce as a motor common carrier in Docket MC-135684 and under contract in Docket MC-87720. Our company has 8 terminals in New Jersey. We employ 81 persons in our New Jersey operations. Our annual sales from New Jersey operations only is approximately \$4,000,000. We have paid \$52,000 in taxes to the State of New Jersey and our capital investment over the past 13 years has been close to \$2,000,000. We expect our capital investment in New Jersey in the next 10 years to total about \$5,000,000.

Bass has been transporting the products covered by S-3035. More specifically it has carried products made from vinyl chloride for the past 13 years. Our experience in the handling of resins, sheeting, floor tile and many other products made from plastic resins in dry bulk equipment and van type trailers has been without apparant serious impact on the health and welfare of Bass employees and our fellow citizens. For example, during the year of 1976, we handled over 225,000,000 pounds of plastic resin and products made from plastic resins. These shipments were transported and handled in equipment federally approved for the proper and adequate handling of these products. Due to OSHA requirements, many trailers are equipped with

ventilation devices to insure a low residual level of any vapor that may remain in the trailer.

On other deliveries, to specific customers, the trailers are ventilated by customer air supply for approximately 15 to 30 minutes before the driver or customer personnel are allowed to enter into the trailer. These examples should give you some idea of how we, as a motor carrier of plastics, and our counterpart shippers are coping with operational transportation areas which may be a possible source of health hazards. Our industry is heavily regulated inasmuch as we are under the jurisdiction of the ICC, the DOT, OSHA, EPA, the 48 states with their vast jurisdictional bodies, in particular, the environmental protection agencies of each one of these states including the New Jersey EPA.

Several years ago, when the first notice was published by OSHA regarding vinyl chloride and its impact on employees or persons handling this product, we at our own expense had all of our employees examined to comply with OSHA requirements for detection of any serious diseases resulting from the handling of these products. Our examinations of our employees resulted in no known cases of illnesses due to the handling of any vinyl chloride products. We presently conduct courses which provide the necessary instruction for our drivers and other personnel on the proper handling of plastic resins. At those plants where our customers have instructed us to wear masks or to stay away from certain areas, Bass drivers so conduct themselves as if they were, indeed employees of that company when they enter their facility.

In addition, at our safety meetings we constantly stress the importance of complying with the regulations issued by the Federal and State agencies. In our business, safety is our most important product, since it is essential that we conduct our operations in such a manner that products will be delivered on time and in the condition tendered to us upon our receipt of the goods. Therefore, our personnel have been instructed in the latest techniques regarding the safe handling of most of the commodities being manufactured and distributed by our manufacturing shippers today.

The Cancer Control Act will have a devastating effect on the economic health of Bass Transportation and particularly on Hunterdon County and the small community of Flemington, NJ from which we operate. The products proposed to be regulated, coupled with other implied restraints in the transportation of these products under Seante 3035, represent up to 65% of our business. The passage of this bill plus its regulatory and economic possibilities would essentially put Bass out of business. The loss of jobs (Bass has the third largest sales volume in our area) would drastically affect the economic health of our community. In addition, the many suppliers and ancillary flow of business to them generated by our company would come to a standstill.

The physical health of our citizens is shared by all of us as our primary responsibility. This has been achieved using existing controls. New research should be encouraged to learn more about the products we manufacture and distribute to our citizens. But we feel certain

the physical health of the community will survive without it being drawn into excess regulatory legislation such as the Cancer Control Act.

As a consumer, in addition to being a businessman, my position is as follows: The products manufactured through the discovery of plastic years ago has led to a better life for me, my fellow workers, and I am certain, for the rest of the citizens of the State of New Jersey and the United States. Industry's expertise in creating and making available these many products for consumers has been the primary factor for New Jersey's economic success, and I know that plastics played a very important role in this process. Take away their manufacturing possibilities for new processes or straddle our industry with such regulation, then our financial health cannot survive. We (all of us in New Jersey) will then have only to look for bleak and dark days ahead.

I thank you gentlemen for giving me the opportunity today to speak before you and present the views of our New Jersey based company and the negative impact the S-3035 Bill will have on our economic future.



June 24, 1977

In appearing before you today, I am making a plea on behalf of the 140 or so small businesses in the State of New Jersey who process polyvinyl chloride - PVC.

Small business is like the weather. Everybody talks about it, but nobody does anything about it. Small business does not have the resources to mount the effort needed to influence legislation. To put the problem in perspective, when I appear before you, my company loses one third of its executive staff and its entire technical or engineering staff. But we do feel strongly that our survival as a viable business enterprise and the attendant welfare of our employees warrants this kind of sacrifice.

Our primary concern is with what is termed "vinyl." There has been much loose talk about the relationship between vinyl and cancer. We must be very clear in our considerations of the differences between:

1.) Vinyl chloride monomer (VCM):

This is a gas used in hair sprays, and is the raw material used to make:

2.) Polyvinyl chloride resin (PVC);

A solid substance, similar in appearance to granulated sugar. It is not used commercially, except to make:

3.) Polyvinyl chloride compounds;

These may be either rigid or flexible and are made by blending (compounding) the resin with plasticizers, stabilizers, and lubricants, using intensive mixing, extrusion or milling and pelletizing. This is the material which we purchase and process into some of our products.

There is no question that long term exposure to high levels of vinyl chloride monomer increase the likelihood of a rare cancer of the liver. But I must emphasize that two conditions are necessary, long time and high levels.

Recognizing this relationship, the Federal government made effective on April 1, 1975 a very stringent regulation governing exposure to vinyl chloride monomer. Under these regulations, our company was required to make extensive monitoring tests to determine the

extent of our worker's exposure. In our monitoring we found no VCM at all. This was in early 1975.

In the meantime, the producers of polyvinyl chloride resins have made a great effort to reduce the residual monomer in the resin. Where a few years ago 100 to 1000 parts per million of residual monomer was common, today practically all producers are down below 10 ppm with one ppm or less being routine in certain products.

These figures are from a paper presented at a technical conference recently by Dr. W. R. Soreuson. The important message is that as a result of federal regulation, an enormous amount of progress has been and will continue to be made in the control of vinyl chloride monomer exposure. We have VCM under control.

The regulations I refer to were promulgated by the Occupational Safety and Health Administration in early 1975 after considerable study and proper hearings. They are being enforced and they are being observed. The risk we run in our plant of cancer arising from VCM is absolutely nil. If we have a real concern for cancer we should be banning cigarettes. Therein lies a real hazard.

We cannot believe that this proposed legislation can make the smallest contribution to the prevention of cancer in our operators or in the State of New Jersey.

I mentioned the regulations issued by OSHA. This brings me to my second observation.

We in the manufacturing business are subject to all kinds of regulations. It has now reached the point for me where I simply give up. As I said earlier, the small business does not have the staff or resources to cope with the proliferation of continual burdensome regulations.

Right now, on this one subject of "vinyl" we have four federal agencies after us namely:

1. OSHA
2. FDA
3. EPA
4. TOSCA

All of these people are very very eager to do their jobs and to justify their multi million dollar budgets. They have at least

the virtue that their standards and efforts are applied uniformly whether in New Jersey or in South Carolina. If we already have all of this federal activity why is it necessary for the state to step in, preempting what is already underway and duplicating an existing bureaucracy? If federal authorities have already studied a problem and made regulations that are designed to protect the worker and the public what possible good can come from the State of New Jersey imposing more stringent regulations or absolute prohibitions.

I submit that we have here a bill under consideration that cannot ban cancer, that cannot reduce the risk of cancer, can only create an overlapping and duplicating bureaucracy and place the New Jersey worker at a competitive disadvantage to the rest of the nation with no useful end result.

NOTE:
earlier note
from Dr. Ehrlich
indicated his support
for S. 3035.

For the Record
Public Hearing on S 3035 AM of June 24

Comments on AM testimony on S 3035

1. On Representative of Chemical Industry - Mr Hansen

- A - Statistics on health & cancer ~~industry~~ of employees in chemical industry are gathered by 'Company Doctors' - not an independent agency
- B - Industry has a large turnover ^{of} employees & those who moved away after leaving employment may develop cancer 10 to 20 years later
- C - Mr Hansen said there were 130,000 employees in chemical industry - & 125,000 would lose jobs ~~or~~ if PVC industry were closed
- D - Antibiotics are pharmaceuticals rather than chemicals & no carcinogens are used in their production

2. On Dr Demopoulis' Testimony

Let's go ~~after~~ after the real culprit - "smoking alcohol & junk foods" not after chemical industry which is responsible for only 5% of cancer production. I say - let's get after both culprits - If we reduce the industry 5% to 2% - we will save hundreds of lives & millions of dollars

JUN 27 1985



