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ABSTRACT

This document contains the texts of 10 panel discussions presented at a seminar designed to give the media an opportunity to learn about occupational health problems. Discussed first were protecting the American worker, and disease on the job. Personal testimony on worker health and a case study of the effects of asbestos were presented. Also covered were reproductive health, places the media can seek information concerning occupational health, cancer in the workplace, the government role in occupational health, and economic and policy issues of regulation. The following agencies and institutions were among those represented in the panel discussions: the U.S. Department of Labor; the University of Illinois; the National Institute for Occupational Safety and Health; the National Institute for Environmental Health Sciences; the Oil, Chemical, and Atomic Workers Union; the United Auto Workers; Mount Sinai School of Medicine; the Occupational Safety and Health Administration; Georgetown University; the American Industrial Health Council; the National Cancer Institute; the Monsanto Company; the Occupational Safety and Health Review Commission; the Shell Oil Company; and the Massachusetts Institute of Technology. (MN)

# Lost in the Workplace: Is There an Occupational Disease Epidemic?

Proceedings from
A Seminar for the News Media
September 13-14, 1979

U.S. Department of Labor
Ray Marshall, Secretary

Occupational Safety and Health Administration
Eula Bingham, Assistant Secretary

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# PROTECTING THE AMERICAN WORKER

Dr. Eula Bingham
Assistant Secretary for Occupational Safety
and Health
U.S. Department of Labor

Ray Marshall
Secretary of Labor

PROTECTING THE AMERICAN WORKER

PROCEEDINGS

MP. GREER: I think that instead of calling this conference Lost in the Workplace, we might rename it Lost at the Radisson Hotel because it's not easy to find your way around, and it's been difficult getting everyone registered.

We're really gratified by the turnout; it's overwhelmed us, and as you can see, we're running behind schedule.

We are going to try to push everything back in a proportionate amount of time, so we'll be announcing at the end of each session when the next one will be meeting, but we will try to perhaps go a little bit later this afternoon and just allow the same amount of time for each panel.

For those who have the task of introducing speakers, the lazy way to do it is usually to say, "Well, the person to follow needs no introduction". -- and I think with Eula Bingham, given the column inches she's generated in the last three years, that's probably a fair statement.

But the way I really know that to be the case, is the other day I picked up the Washington Star, and there in the crossword puzzle was 39 across, four letters, "OSHA lady." So, without further ado, let me introduce Eula Bingham.

MS. BINGHAM: Thank you, Frank. It is a pleasure -- can you hear me back there? How about that, is that better? Shakey, eh? Can we turn it up.

Yesterday, I was in Worcester, Mass. and the whole thing went kapoot, and I've begun to think I have a black cloud around my head so far as public address systems are concerned.

Well, I'll begin, and hopefully somewhere in the process, they will turn the microphone up.

This conference is intended to provide for those of you in the media field an opportunity to learn about occupational health problems. Those problems that are faced daily in this country by workers. Now it is true that we have come a long way in the last nine years since the Act was passed, and I would be remiss if I didn't tell you that industry has cleaned up many factories, so that many workers will not now develop cancer as a result of exposure to vinyl chloride.

There are thousands of workers who are protected from massive exposures to asbestos, and I can go on and on, because a great deal has been done.

But I cannot fail to tell you about what has not been done. It comes across my desk every day. Within the last year -- within the last six months, I have been shown pictures that we have taken on inspections where asbestos is two inches thick on the floor of a factory, where workers

have been let go from a job because they have developed lead poisoning on the job, and they've had to seek help from the State Health Department.

So I assure you that the task is still enormous. Workers still do not have the right to know what the name of a chemical is in the workplace. They don't even have the right to know whether they have asbestosis or not -- even though that worker's superior may know whether he has asbestosis.

Once again, there is much to do. And I believe that the media in this country have a responsibility to learn of the hazards faced by workers, to expose employers who fail to provide a safe and healthy workplace, to expose the federal and state government when it fails to fulfull its responsibilities.

But I think you can provide even more than that. It is through newspapers and magazines and TV -- maybe a magazine in a dental office, that Americans are educated in this country about what is happening in the world. It is through these efforts that children in this country can grow up expecting and demanding as adults, a safe and healthy workplace.

I welcome you to this conference, and hope you will work with us to raise the expectations of American workers today and ten years from now.

Now it is a special privilege for me to introduce to you a friend and ally in all our efforts. When I first met Ray Marshall, it was in an office in the Department of Labor, and I had never seen him before, and he

said to me -- and you never really know what to say in an interview, and he said, "Well, what do you think OSHA should be doing?"

And I said, "Well, I think we should be pursuing the really severe safety and health hazards in this country" and mentioned a few of those that I perceived, lead being one of those -- arsenic and carcinogens, and that we should pursue the development of standards, and we should focus our inspections on those high hazard areas.

And he had a trace of a smile on his face, and relayed to me the fact that he had discussed OSHA with a friend of his, former Senator Yarborough, who had fought for the passage of the Occupational Safety and Health Act, and he relayed to me that Senator Yarborough said that the thing that had been wrong with OSHA was that it went after the minnows instead of the whales.

And that day we decided to go after the whales instead of the minnows!

I'd like to say a little bit more about the Secretary of Labor. He never ducks a tough decision. He has personally set the tone of all of our efforts; he has been steadfast and strong in every crisis we have faced, and we have faced quite a few. After a session with him, when we discuss a particularly difficult issue and reach a particularly difficult decision that must be carried out, I leave the session with a sense of confidence that it certainly is a team effort that we have -- and I can assure you

that he is a home run hitter on that team.

Mr. Secretary?

SECRETARY MARSHALL: Thank you, Eula. It is a special pleasure for me to join this historic media seminar. As someone remarked to me the other day -- this type of session should have taken place years ago. If it had, then maybe the nation could have been spared the ridicule and jokes about OSHA that distracted attention from the serious threats to worker health and safety.

We believe that working with the media is an extremely important thing for us to do, because as Eula emphasized, the attitude that people have about OSHA, as well as in all of our other departmental programs, is conditioned by the media.

And I'll have to say that in our programs, we have had very good response from the media, and I know that in a lot of places, I think one of the natural problems that we have had is that there is a tendency to focus on the unusual -- and I think that's understandable, and that causes the perception of reality to be different in many areas from the reality -- and that tends to create a lot of tension. It particularly creates tension between people in public office and the media. I know that; I grew up in Louisiana. I was born in Louisiana and one of our governors some time ago was Hughey P. Long, and Hughey P. Long used to have a running conflict with the media all the time.

And one of my favorite cartoons from that Hughey P. Long period showed Russell Long, Hughey's son, and now the United States Senator from Louisiana, crawling up in his father's lap one morning, saying, "What are those lying newspapers saying about us today, daddy?"

But that, I think, has not been the case with OSHA. I think you've helped us to get some public understanding of the occupational safety and health problem, and we're grateful to you for it. We think that we need to do more, because it's a complex area. We need to have debates on this important issue, and there needs to be debates about the really important problems, and we've tried to facilitate that process by strengthening the enforcement of the program.

Now as you know, or most of you undoubtedly know the mission of the Department of Labor is to protect and promote the interests of American workers -- that's what we were created to do. There is no more important protective effort than occupational safety and health. It is our task to work with labor and management to prevent injury and disease.

Now I'm glad to say that we have been able to turn OSHA around, and to prevent -- and I think to focus attention on the really important things and less on the ridicule. Let me also say that this was one of President Carter's earliest concerns.

I hadn't been in politics long, but one of the things I learned right off was to be interested in what the President was interested in -- and he took an early interest in OSHA, and instructed me to do everything possible to strengthen the administration of OSHA, and to select a good administrator who could carry out the purposes of the Act, but get rid of the silly, nit picking, mismanagement that was undermining public support.

I found the very best administrator I could in Dr. Eula Bingham, and the President repeated his concerns to Eula before she was ever sworn in. In the last two years, the agency has produced more health standards than it did in the first six years of its existence.

Under Eula Bingham, we've cut away unnecessary regulations that had nothing to do with worker safety and health, so that we could concentrate our efforts on the really serious hazards threatening workers. We're targeting our resources to the work [illegible] where workers each day face irreversible injury and disease. We've taken the first steps toward getting carcinogens out of the workplace and preventing occupational cancer.

Last year, five and a half million workers were injured on the job. Untold thousands were struck down by deadly and debilitating toxic substances. According to the National Safety Council, workplace injuries devour close to one percent of GNP each year. It is estimated that there was $23 billion lost in wages, medical expenses, insurance claims and productivity delays as a result of accidents alone in 1978. And that doesn't even take into account the tremendous toll of occupational disease.

The National Safety Council estimates that the cost of occupational illness is at least $15 billion for 1978. This is an annual toll that is clearly larger than the toll of Americans killed and injured in the Vietnam conflict. Yet this tragedy does not elicit the public anguish and concern commensurate with the magnitude of the problem.

Perhaps because workplace deaths are diffused throughout the society and because individual victims die quietly many years after their work place exposure -- there are no marches in the streets or mass rallies calling for an end to on-the-job disease. There is only the voice of individuals -- government officials, environmentalists, trade unionists and some journalists pointing to this problem, seeking to bring it to the attention of the American people.

There is a very long and illustrious history of writers and journalists exposing unhealthy conditions of work. Agricola, the 16th Century scholar, published De Re Metallica (phonetic) and the authoritative and scientific source on mining and metallurgy -- he pointed out the dangers of mining, and said that mine safety was essentially the responsibility of the mine operator, a viewpoint that underlies modern day safety and health regulation in this country.

Upton Sinclair's classic, The Jungle, is best known for its description of impure food, but Sinclair later wrote that he was not thinking primarily of that issue when he wrote the book. Sinclair said, and I quote, "I wish to frighten the country by a picture of what its industrial masters are doing to their victims.

"And, entirely by chance, I stumbled on another discovery -- what they were doing to the meat supply of the civilized world," end of quote. A front page story in the Washington Post in 1962 by Morton Mintz called attention to a study of thalidomide's role in causing birth defects. That article set in motion a chain of events that led Congress to the protection of American people from unsafe drugs.

Since OSHA was established in 1970, there have been other notable examples of investigative journalism focused on the work place environment. The New Yorker series, by Paul Brodeur dealing with asbestos exposure in

Texas, the Philadelphia Inquirer series on cancer-causing hazards in Philadelphia chemical plants. The Washington Post articles on Kepone, which first brought this tragedy to the public attention. The Baltimore Sun series on lung cancer incidents at Sparrows Point Steel Mill in Baltimore. The fine work done by the Chicago Sun Times in its series on "the walking wounded." And most recently, the Des Moines Tribune articles on health hazards to Iowa workers across that state.

It is no exaggeration to say that virtually every piece of safety and health or workers' compensation legislation enacted in this nation was enacted after a major disaster. It is usually our writers and journalists who have alerted the American public to these tragedies, and helped to create the moral and political climate that led to legislative action.

Today, you and I are faced with a new kind of threat to the lives of American workers. In addition to reporting about construction accidents or grain elevator explosions, you have begun to tackle the infinitely more complex and subtle field of occupational health.

To accurately describe the dangers from toxic chemicals, you must deal with concepts and terms like dose-response relationship, bio-assay tests, threshold limit values and many others which have previously relegated to

the laboratories of chemists and environmental health physicians.

These are not easy concepts for the American public to understand, which makes it imperative that you labor to clearly explain these terms.

There's a great difference between the kind of safety and health legislation previously enacted and the environmental legislation enacted in the last decade of which OSHA is a product. To illustrate the difference, let us consider the very first regulatory program in America which involved boilers on steamboats.

This program had universal support -- because the problem it addressed was both visible and immediate. If a steamboat boiler exploded, the crew and passengers were quickly thrown into the Mississippi River, or whatever river they happened to be on, if they were lucky.

Now there was a very clear cause and effect relationship between the hazard and its impact on human health. We didn't have economists in those days demanding cost benefit analyses of lives saved on the steamboats. There was no Congressman demanding a one house veto of steamboat regulations, and no scientist questioned the validity of tests on animals to determine the danger from boilers, or demanding that small steamships be exempted or that those carrying farm products be exempted.

Unfortunately, for modern day regulatory programs, our society is much

more complex, and it is difficult today to gain a consensus on any issue, much less a topic as involved as occupational health.

It is much easier when dealing with environmental and occupational health to fall back upon demagogy or as when a member of Congress proposed to introduce a bill requiring labels that read -- "Warning -- this substance may be dangerous to your rat's health."

I trust that you will approach those who seek to weaken or damage public health regulatory efforts with the same critical eye and healthy skepticism that you bring to bear upon governmental programs when they fail to serve the public. And I think it's important for you to do both of that, because I think it was entirely appropriate for journalists to focus on the problems that OSHA had created by regulations that were too detailed, paperwork that was unnecessary, concentration on relatively insignificant issues. That was entirely appropriate, but I'm sure that because of that kind of ridicule, we gave greater urgency to the question of doing away with those regulations; making the regulations more readable and making them have more commonsensical than they otherwise would have been.

Now OSHA, in its formative years, provided a great amount of that kind of material for journalists inclined towards satire -- with its undue attention to trivial violations of regulations, and almost complete neglect

of occupational health, OSHA became the butt of ridicule in the media. It was said that OSHA's infamous standard requiring open ended toilet seats in workers' restrooms was written in order that the agency's officials would not get a broken neck when they took a drink of water. That's what one journalist had to say about that.

This regulation -- and more than 900 others, have been revoked. OSHA has concentrated virtually all of its attention on those workplaces with serious hazards, and has eliminated a great amount of paperwork and forms required of small business employers.

Opposition to this agency's policy is no longer grounded in ridicule. OSHA can back its regulatory decisions with the very best scientific and technical expertise. I believe there is one guiding principle in the occupational health field. Every worker has the fundamental human right to a safe and healthful workplace. A worker should not have to lay his or her life on the line in order to keep a job. No worker should have to choose between his or her life and a paycheck.

We're committed to the proposition that the safety and health of workers should not be an element in economic competition. Workers in our society should not have to pay the price for disease and injury that can be prevented.

I believe workers also have a right to know the nature of the substances and hazards in their workplace environment, and to know how

effectively their employers and the government are protecting them against those hazards.

That's where each of you will have a special role to play.

The men and women you will hear today and tomorrow come to the field of occupational health from varied backgrounds. Some were scientists or physicians concerned about occupational disease, when such concern was considered eccentric in scientific circles. Others were unionists or industry officials or environmentalists long concerned with this problem. Some of our speakers are reporters, are writers, who became interested in this field.

But each of these people shares a common belief that workplace disease does not just happen -- that there is a cause, and that this cause can be eliminated or controlled.

I've been inspired by the work of these men and women, and hope that we can learn from each other. I think it's significant that we have people here who have different attitudes about how to get the job done -- I hope that there are none here who think that the job ought not to be done, and that we welcome that debate -- because we think that that is extremely important to engage in it.

We're not absolutely certain that we know how to do the job, and we therefore, believe that meetings like this can help us strengthen our understanding, and we welcome the debate, the dissent that can lead to an enhancement of our understanding. And I hope that this conference will help you in the media understand its concepts, its tools and its problems much better.

Thank you.

Now I'll be glad to try and respond to questions that you might have. I'm sure if I can't, I can get Eula to do it.

MR. GREER: Sir, let me read this to you.

MR. MARSHALL: All right,

MR. GREER: It says the U.S. Postal Service has steadfastly refused to cooperate with the Occupational and Health Administration to permit the inspection of their facilities by OSHA authorities. Please explain what is being done by the Department of Labor to bring the workers of the U.S. Postal Service under the protection of the Occupational Safety and Health Act. Is there no current legal enforcement effort now being made to bring the U.S. Postal Service into compliance, along with other large employers?

MR. MARSHALL: Let me say generally that we're concerned about the occupational safety and health program throughout the federal establishment, the federal government.

I think that it's indefensible for us to require of the private sector that which we would not require of the public sector. That is, we will not do the same kinds of things within our own ranks, and we have some pretty hazardous operations involved within the federal establishment.

Now the Post Office is, technically speaking, not a part, of course, of the federal government any more -- it's an independent agency, but I assume, Eula, that they're covered by our federal regs.

Now what we're trying to do, and are in the process of doing, is to try to develop regulations that will be more effective in dealing with the federal sector.

Eula, do you want to enlarge on that?

MS. BINGHAM: Well, there is an effort to come up with a strengthened Executive Order so that there will be more attention paid to the federal sector. You must know that there is currently in the Congress a bill that has, I believe, already been introduced that would bring the Postal Service under the Occupational Safety and Health Act -- and they would have the same provisions that apply to the private sector.

MR. MARSHALL: Are there other questions? Yes?

MR. (Unidentified): What problems do you see with requiring companies to disclose the names of chemicals that workers are working with. And do you see any action within the federal government in this coming year?

MR. MARSHALL: Eula, you followed that more closely than I have, so let me get you to respond to it.

MR. MARSHALL: The question was -- what are we doing to try, through federal action, to require companies to disclose toxic substances. Is that the essence to your question?

MR. (Unidentified): Yes.

MS. BINGHAM: We are working with the Environmental Protection Agency, we have a task force. We are currently developing together with EPA, specifically, the toxic substances group at EPA, a joint approach to dealing with this particular issue, and I would estimate -- and I always hate to give dates -- but I would say that within six months, there will be proposals on the street, either from one or both of these federal agencies.

MR. MARSHALL: Are there other questions that I can get Eula to answer?

MR. (Unidentified): I understand that certain newspapers have steadfastly refused to cooperate with OSHA with regard to the occupational hazards in the printing trades. What is OSHA doing about that?

MR. MARSHALL: Do you know about that Eula? The question -- let me repeat the question. That some newspapers, some of those lying newspapers -- are refusing to cooperate with OSHA inspections? I hadn't heard about those, but maybe Eula has.

MS. BINGHAM: Well, all I can say is this -- if there are worker complaints that are filed, we go out and make the inspections, and issue citations. There should be then, follow-up inspections to determine whether the hazards have been abated. If that's what you're talking about, it would come under the enforcement arm.

Now you may be also referring to some activities that NIOSH has been engaged in, in doing health hazard evaluations; I am not certain about that -- perhaps Dr. Froines or Dr. Robbins, who's going to be here, could comment on that later.

I would say it is not a matter of whether you want to cooperate or not -- they are required by law to provide a safe and healthy workplace. If we make an inspection, either because it has been scheduled, or as a result of a worker complaint, and find a violation, then we shall issue citations and assess penalties.

MR. GREER: There is a microphone over here.

MR. MARSHALL: Well, I can repeat the questions -- it'd take them too long to walk to that.

MR. (Unidentified): (Inaudible).

MR. MARSHALL: The question is -- what are we doing about the decisions in the Fifth and Tenth Circuit Courts of Appeal which attacked OSHA? Well, we're protecting ourselves. We've got a lot of lawyers, and we intend to pursue those attacks all the way to the United States Supreme Court, and we intend to win when we get there. We think that we'll have

some trouble maybe in lower courts, but we intend to make the very best case that we can, if we go all the way to the Supreme Court.

Eula, do you want to add to that? We've got 600 lawyers in the Labor Department, and this is very high a priority for them.

MS. BINGHAM: I'm not certain whether you are referring to the Fifth Circuit decision on benzene versus the other Circuit decisions on standards, or whether you're referring to the decisions where the Circuits have split on the right of a worker to refuse work. That's what I thought maybe you were talking about.

I believe that's the Sixth Circuit -- that has written a decision that says workers do have that right, and they cannot really expect to wait until the inspector gets out there, and lay their lives on the line. The Fifth Circuit has taken an opposite point of view.

When you do have Circuits split on such an issue, it is frequently that we make the decision to have the Supreme Court decide that issue, and it is my understanding that that's what we intend to do.

MR. MARSHALL: Are there other questions? Yes sir?

MR. (Unidentified): (Inaudible).

MR. MARSHALL: Eula?

MS. BINGHAM: Well, I think there were so many issues to be covered -- perhaps you are suggesting a topic that should be in the third day or should be brought up rather ad hoc here at this session.

I was asked before we started about what we intended to cover in terms of worker compensation as it exists in the state, versus what might exist at the federal level -- and we should discuss that, also. Maybe the next conference? I agree with you: it's very important --

MR. MARSHALL: Are there other questions? This fellow right here with the camera?

MR. (Unidentified): (Inaudible).

MR. MARSHALL: Let me repeat the question. The status of the OSHA carcinogen standard, and is it dependent on the court decision on benzene. Eula?

MS. BINGHAM: It is not dependent -- it is a regulation describing how we're going to deal with carcinogens in the workplace, and I'm reading fast and furiously -- I can tell you, I always carry around this little sheaf of papers; it will be in the forseeable future. I would describe that in terms of weeks.

MR. MARSHALL: All right, are there other questions. Yes?

MR. (Unidentified): How much has the Supreme Court decision with regard to OSHA inspectors having to obtain warrants to inspect a company -- how much has that interferred with the work of OSHA?

MR. MARSHALL: Let me give my reaction and then I'll let Eula give hers. Mine is that it set us back in one of our main objectives with respect to OSHA, and that is to reduce paperwork. It increases the amount of paperwork that we'd have to do. Eula?

MS. BINGHAM: Well, I think that's about it. I think it has not really had a great impact on anything else. If we are required to obtain a warrant, we do so. And by the way, it is an extremely small percent of the cases where we're asked to do that.

MR. MARSHALL: Over here -- yes, ma'am?

MS. (Unidentified): (Inaudible).

MR. MARSHALL: Eula, do you want to answer that? The question is what are we doing to get better information on the incidence of occupational deaths, diseases and accidents.

MS. BINGHAM: That's a very difficult problem to deal with. We're working with NIOSH and the CDC. We have asked the National Advisory Committee on Occupational Safety and Health to help us with that particular problem. We're just wrestling with it, as a matter of fact.

MR. MARSHALL: But let me also enlarge on that to say that we have given very high priority to that issue because we need to make it -- we need to get better statistics in order to target our resources, as well as understand the nature of the problem we're dealing with -- as we need to understand much more about incidence, so we've tried to develop better statistical information in order both to evaluate our own activities and to help pinpoint the problems.

Yes?

MS. (Unidentified): (Inaudible).

MR. MARSHALL: National Cancer Registry?

MS. BINGHAM: I can't really tell you what activity -- I think there is some effort in that direction, but I can't tell you how driving it is. Maybe you ought to ask that of - I say, it's very interesting, I look over there and I see Irv Selikoff shaking his head 'yes'.

MR. MARSHALL: Is there such, Irv? Use the microphone.

MR. SELIKOFF: The National Center for Health Statistics is looking at the possibility and the desirability of establishing a National Death Registry, which would include a cancer registry. These are being looked at by the National Center for Health Statistics.

MR. MARSHALL: Yes?

MS. (Unidentified): (Inaudible).

MR. MARSHALL: We have some with that; in fact, we have some of that within our own agency that we have to be concerned about. Some Labor Department agencies like the Bureau of Labor Statistics collects information that would be useful for us, but the disclosure problem makes it difficult for us to use it -- and you probably know of other situations like that, Eula, that we've had -- we've had discussions to try and make the maximum effective use without violating the disclosure problem.

Yes sir?

MR. (Unidentified): When is federal OSHA going to take over the Indiana state OSHA?

MR. MARSHALL: Eula, when you gonna do that?

MS. BINGHAM: If I had a crystal ball, I might tell you. I think we are working with the Indiana state plan, we're working with Iowa state plan, the South Carolina, Kentucky and Tennessee -- to evaluate, to correct difficulties.

I can't tell you whether or not OSHA will assume jurisdiction there; we have to look over the data that we have, and then come to that decision -- and it probably will be with the agreement of the state of Indiana if it happens.

MR. MARSHALL: We got time for about one more, if somebody wants to raise it. There he is -- go ahead.

MR. (Unknown): Mr. Secretary, in your opening remarks, you stated to directly underline the importance of the media coverage of OSHA's area of responsibilities, and you pointed out that public discussions of the problem are conditioned largely by what will be in the reports. It seems to me the media has very serious technical and professional problems in covering as complicated an issue as OSHA deals with. It requires technical training, knowledge of the terminology, a lot of hard working expertise, and so on.

Do you have any suggestions as to how the media can do a better job of reporting on health in the workplace?

MR. MARSHALL: We didn't plant him there! He works for somebody else.

That, of course, is part of what we're trying to do here. And I think that there will be many suggestions that will come out of this seminar that will help with that. You've identified an obvious and serious problem.

I think that one thing you have to do is to have somebody who more or less specializes in this range of problems, or there must be somebody that you have access to whose judgment you trust, who has this kind of expertise, and to develop those.

I think that there's a growing literature -- I know that there is a growing literature in the occupational safety and health area, and it seems to me that reporters concerned with this issue can avail themselves of that literature.

Now we produce a lot, and I think that we'd be glad to add your name to our mailing list. I believe ours are very objective, but there are others who would think that they were not, so my recommendation to you is to do what I did when I was a writer, and I never trusted anybody.

You know, I'd get information from as many different sources as I could because I recognized that all sources tend to have some bias, and I don't believe it's possible to get it all out, so what you need to do is to get it -- I would look at the critics of OSHA as well as what OSHA puts out, and usually that's not in -- you know, the people who write in this field, I've noticed, are a lot better than the people who write in my field of economics.

You know, in economics, there's some virtue in obscurity in writing -- because some of our professors have actually taught that, be suspicious of anybody who writes well, and they've done a very good job of training a whole generation of economists who specialize in that instruction.

But in this field, I'm not an expert in it, and I've been able, I think, to read it -- it takes some time, and I think that one of the things that the media can do, of course, is to translate a lot of that stuff.

Eula, do you have any other suggestion to make about that?

MS. BINGHAM: No, except that it was very interesting -- I just talked with a reporter a few minutes ago who had spent a year at a school of public health -- and I won't advertise the school, but at a school of public health, probably would be useful to take some courses if one intends to write full time in this particular area.

MR. MARSHALL: Well, thank you.

MR. GREER. Thank you. There is coffee back here, and we'll call the next session to order in about ten minutes. Thanks very much.

# BEHIND THE FACTORY GATE:

# DISEASE ON THE JOB

Dr. Bertram Carnow, Professor
Occupational and Environmental Medicine
School of Public Health
University of Illinois

Dr. John Froines, Deputy Director
National Institute for Occupational
Safety and Health

Dr. David Rall, Director
National Institute for Environmental
Health Sciences

Anthony Mazzocchi, Vice President
Oil, Chemical and Atomic Workers
Union

Bruce Karrh, Corporate Medical Director
E.I. du Pont de Nemours and Company

MR. PEARCY: Our first panel is entitled "Behind the Factory Gate - Disease on the Job," and is intended to give all of you an overview of the problems that we'll be discussing for the next couple of days.

Giving the first speech and being moderator for the panel is Dr. Bertam Carnow. Dr. Carnow is professor of Occupational and Environmental Medicine for the School of Public Health at the University of Illinois, and is Director of the Great Lakes Center for Occupational Safety and Health, which is a part of the University of Illinois Medical School.

The Center is one of the largest NIOSH educational resources centers in the country. Dr. Carnow will give the introductory talk and will introduce the other members of the panel. Dr. Carnow?

DR. CARNOW: Thank you very much. Dr. Bingham suggested to some of you that you can take courses at the schools of public health -- we have a school of public health. Anybody interested in taking courses would be welcome, and if a large enough group of you want to generate a seminar or express interest in such a thing, we'd be delighted to participate -- teaching is our bag.

I think that what will follow in the next two days, as we unravel and reveal to you some of the problems that we in the field face, you'll begin to see the enormous dimensions of it, and I think that these two days may well stimulate your interest in getting more education about the problem.

Now, I've been asked to give an overview, and an overview means, I guess, that I should tell you about what everybody else is going to say,

and also, generally, about what the problem has been. And I think that an overview is good in the sense that it helps to put into perspective where we've been in occupational disease, where we are now, and where we must go if we're going to make any impact at all on the problems that you'll be hearing about.

The first thing I'd like to do is look at American health -- I think that puts it in the best perspective. Smallpox has become a non-existent disease. There has not been a single case in the world in the last period of years, and it's a disease which has been eradicated.

Tuberculosis, which killed one out of seven men after the age of 45 in 1900, is no longer a serious problem in this country, although it's still a problem in the world.

So with regard to acute, infectious diseases, or infectious diseases generally, we've made tremendous conquests -- and so we look ourselves and say, "Well, that's pretty good, but now let's look at longevity" and if you look at longevity in adults, and in particularly in males, you find that those more than 45 years of age live a very little longer than they did 30 or 40 years ago.

The reason is that they're dying from different diseases, and the diseases that they're dying from are chronic, non-infectious diseases -- and there has been an extraordinary growth of these kinds of diseases in the last few decades -- diseases of the heart, lung, liver, bones, joints and nervous system.

And it's interesting with heart disease -- for the first time, there's been a turnaround, there's been sharp drop in heart disease, and the

reasons? Preventive medicine, primary prevention, exercise programs, diet programs, cigarette discontinuance -- and for the first time, there's been a turnaround. But for these other diseases, there has not been, and I think if we do not pay attention to what is happening in the workplace, there will not be.

The other big reason for concern and the other big reason for the non-huge increase in longevity relates to cancer. We had 600,000 cases, 350,000 deaths last year -- an incredible problem. A hundred thousand Americans will die from cancer of the lung this year -- more American males than all other cancers combined, and with some other cancers, the same thing.

And as you will hear over and over again, and repetition I think is good in this case -- 85 to 90% of all of these cancers are environmentally related, and if they are environmentally related, they are preventable. And the only thing you have to do to prevent them -- the only thing -- is to find all of the causes for them and to eliminate them.

And this is the way it has to be -- because primary prevention is the only way to go with these diseases. If we don't go that way, then we will be doing body counts as we are now.

The problem is that all of these diseases have very long latent periods -- they're very quiet, they don't give us any warning. Some of them from the time of first exposure, may be time bombs set for 50 years. Selikoff will talk to you about that, about asbestos, and how it can kill 50 years later from mesothelioma.

The other problem is that these diseases all have multiple causes, and

that makes them difficult -- because you have to ferret out all of the causes, or at least the major causes.

The worst part of them is that when they appear, they are frequently irreversable, if not fatal. Certainly with cancer, you're talking about diseases that are fatal.

Let me give you a clue to the number, for example, of carcinogenic agents in the community. Skin cancer doesn't kill, and it's easy to see because it's on the outside of the body. It frequently is not even reported, because it's taken care of in the office of a surgeon or a dermatologist.

The estimate, though, of the number of skin cancers that occur in this country each year is somewhere between 600,000 and a million -- and if there are carcinogenic agents which will cause skin cancer, many of them can cause cancer of other organs. And this will help to give you some of the dimensions of this problem.

Now for a long time, accidents have held the center of the stage -- and there are a lot of people who would like to keep it that way. And accidents have held center stage for good reason -- first of all, they kill many workers. Millions of workers have accidents, many thousands die, and many other thousands are permanently damaged and disabled.

The thing about accidents is that they're dramatic. You hear a scream and there's a crunch of bone, and there's blood and ambulances and a lot of activity, and these can be documented. And so everybody has a concern about this. But there is not the same concern about a disease which comes on with a cough or a wheeze. A lot of people in this country talk about

a 'smoker's cough." Well, that's not smoker's cough -- that's bronchitis. And ultimately, it goes on to kill.

So these are ignored. Headaches, mild fatigue, some little loss of weight. Nothing. It's not as dramatic as blood and bones being destroyed.

In regard to disease, which unquestionably, as a result of workplace exposure, kills many more thousands than accidents -- there's no question about that in my mind - until recently, little or nothing has been done because of the reasons that I mentioned -- the insidious nature of the onset, the confusion with other causes and so on.

But for the last decade, we'd begun to realize the kind of iceberg that we have at our feet, and are beginning to see the tip of what I assure you will be an enormous iceberg.

Now in regard to disease, we've had the same approach as we have had with accidents -- a concern about acute, catastrophic episodes. We were involved in a tannery episode where a truck driver put the wrong material into the wrong tank because it wasn't labeled, and hydrogen sulfide gas was generated -- and within three minutes, eight workers were dead and 32 workers were badly injured, many of them with some residual problems even now.

This kind of thing brings the problem to everyone's attention. But not the cough, not the wheeze, not the headache.

Let me tell you a little bit about the iceberg, and you'll hear about this more. After the Coal Mine Health and Safety Act, it was decided to compensate coal miners, and it was expected to add some thousands -- nobody

was sure how many -- ten, twenty, thirty -- would emerge, to ask for compensation. Currently, there are 300,000 coal miners and/or their families who are receiving compensation, and the cost comes from all of us, and it will come for a long, long time.

Now, this has been affectionately termed "black lung" because an autopsy of the lung is black from the coal dusts, and since this is the age of technicolor, there is another called 'brown lung' which you will begin to hear about, byssinosis, which affects some 200,000 workers already, workers who are wheezing and coughing and having asthma-like kind of problems. And, to complete the color picture, you will hear from a number of people about "white lung," a disease due to asbestos. And that's the one that I think gets me, I think the most.

We've known about asbestos since 1907, and lung cancer from asbestos since 1935, and mesothelioma -- a 100% fatal cancer -- since 1959, and yet hundreds of thousands of workers continue to be exposed to asbestos, and today, as you just heard from Dr. Bingham, are still being exposed to asbestos. And an estimate was made by a panel of experts, and Dr. Rall was on that panel, and will be discussing it with you -- that many thousands will die as a result of those exposures.

Now, the problem, as I said before, with disease is that we're really dealing with so-called natural phenomenon, so-called 'natural' disease." It's natural to have high blood pressure, it's a natural thing -- cancer is thought of as natural, and they are in a sense, natural diseases, but in this case, they are from unnatural causes, and the ferreting out of the unnatural cause is a job that we have before us now.

The standards which are being revised, and I'm afraid will continue to be revised frequently -- and I'll mention something about that -- by NIOSH at the request of OSHA -- are hopelessly inadequate, and the reason that these standards are hopelessly inadequate, standards which were supposed to protect the worker in the workplace, was because they were based on virtually no data at all. They were based on a few animal experiments in most cases, or a few human experiments, or a couple of workers -- and you have to look at hundreds of thousands of people if you're gonna find cancer.

But a couple of workers in what we call cross sectional studies -- a cross-sectional study is a study which looks at a group of health workers who are working in a plant. Now the people who are sick are in the hospital or home. The people who are irreversibly harmed are retired, and the others are dead. And so these are studies of what we call a survival population, and yet most of the standards that we had up until OSHA -- the Occupational Safety and Health Act -- came into being, were those kinds of standards.

The problem, again, iceberg phenomena. We have an occupational medicine clinic at Cook County Hospital as part of our Center. Two years ago, because we had been pushing very hard with the young physicians about occupational disease, two men were referred up to us with bellyaches, and feeling "fuzzy" in the head. And they were sent to us because they had a history of working in a lead plant -- battery plant.

When the thing was over, we had seen 70 workers from that same plant with various stages of lead poisoning, and at one time, at the hospital,

had 14 of them on treatment. Now you might say, "Well, you know, this is a new problem." It's not a new problem at all. We've known about lead poisoning for 2,000 years -- probably more than that. They say that Hippocrates knew about it too, and that was before Christ was born.

Let me give you another example. Two men came into our clinic with a little wheeze, and some shortness of breath, and we looked at their X-rays, and they were extraordinary. They had advanced silicosis that I had not seen in 15 years. And NIOSH sent a team in, and before it was over, 39 workers with silicosis were found in a group of 70 workers -- and many of them had no symptoms at all. Insidious, quiet, deadly. But all of them now have permanent scarring of the lungs.

Now, silicosis is not a new disease. Pliny, the physician, in One A.D., devised a sheet mask to protect the slaves in the mines who were exposed to silica, from dying in such large quantities that they couldn't continue the mining. So it's not a new disease -- and yet, even today, last year, 39 cases -- in a foundry.

You will here, and some of you have printed, the concerns of industry about the changing of these standards -- why are they changing? They are changing because we're paying for the sins of the past. They're changing because of the ignorance that we had about standards. They're changing because we are almost on a daily basis, gathering new data that tell us that things are a lot worse then they were.

Lead went from 200 to 150 to 100 to 50 micrograms, because we found that men were being diseased at those levels. And the same thing can be said for arsenic, asbestos, and a host of other standards that are

currently being revised. So, again, it is a problem, and standards do have to be revised. But if workers are going to be protected, this is the way it's going to have to be.

And there is a cost -- but I cannot imagine that the cost in any way can exceed the cost of taking care of all of the disabled workers that I mentioned, and I talked to you about at least 600,000 with just those three diseases. Or, the cost in suffering and misery and lost life and lost time from work and so on.

OSHA makes it possible for us to get the data -- from my standpoint, my end of the elephant -- and with computers and biostatistics, and epidemiology, a science of studying groups, we are finding and can find answers, as are investigators all over the country -- and as we find answers, they must be implemented to protect the health of the worker.

Professionals are being trained now, as never before, at centers -- there are now 11 centers around the country. And in our center alone, we're training almost 40 people in industrial hygiene, safety, nursing, medicine. We're turning out more physicians each year than were turned our nationally every year over the past decade -- and other centers are doing the same thing. So there will be skilled people in the field to help with this activity.

Now, I'm sure after you hear what you're going to hear for the next two days, you will understand why OSHA was born, why OSHA must be protected, and why OSHA must be supported. To do anything else is to invite more needless suffering -- and more revelations of workers dying or who will die as a result of needless exposures to toxic agents in the workplace.

The problem, again, is that the workplace is the chemical area the workplace is where new materials are first used. Many of them we know nothing about -- a new chemical every 20 minutes. The exposure levels in the workplace are the greatest. This is the area where we must concentrate to find out what toxic agents do to people.

I think that everyone is beginning to recognize that the cost of a diseased worker is something that no one can afford. I think that many people in industry recognize that a lot of the loss of time, loss of production, the incrediible increase in insurance costs, in comp costs, in legal costs, none of these are compensated sor, and there is no cost of control of technology and control of the workplace that can exceed that cost.

As I said, you'll hear more about this in the next two days. The problems continue to be enormous. We are just beginning to grapple with them -- but we need help and support in grappling with them, and we need knowledgeable people not only to work in the field, but to transmit and translate what we're doing, to the public -- I think that you are the people who have a great responsibility, and I certainly hope that after these two days, you will take greater interest, and begin to promote the kinds of activities that are necessary in order for us to protect the 100 million people in the workplace. You have to understand that the way those 100 million people spend the most important 40 hours of their week has got to be a major factor in their health.

Thank you very much.

DR. CARNOW: Okay. Our next speaker -- actually, all of our speakers

are known, I think, to many of you, many of them have been in the public arena for a long time. I will just give them a brief introduction because all of them have very long biographies.

John Froines is Deputy Director of the National Institute for Occupational Safety and Health. He was formerly with OSHA, and he has been in the field for a long time and doing an important job. He will be talking to you about controlling known hazards. Dr. Froines.

DR. FROINES: The interest in this field, of course, I think is markedly growing -- that is, the relationship between the media and occupational health. I just got back last night from a conference in Finland, the International Social Security Association, where in fact, one of the parts of the program within the meeting, within the Commitee for the Prevention of Occupational Risk, was and I quote -- "the role of the mass media in the prevention of occupational risk."

So it's clear that the interest, really, of the press an the media in general, in occupational health is not only here, but also now, and most recently, worldwide.

One of the things -- I want to make one quick comment about a question that came up earlier about the relationship between the reporter on the one hand and the scientist on the other -- or that is, the person working in occupational health.

Not long ago in a journal entitled Lancet, there was an article showing the increased levels of mutagens in the urine of hospital nurses, who had been in the business of providing chemotherapy to cancer patients. Of course, in a cancer patient, you will find high levels of mutagens --

but one would not have anticipated the fact that the nurses who were giving chemotherapy would also have high levels of mutagens, thereby, indicating some exposure to mutagenic agents. That's an extremely important scientific paper, I think, one that needs to be paid attention to -- and it was, as I say, in Lancet, which is an important journal, I think, for people in the media to be looking at.

I think it's absolutely crucial -- if I might say at the outset, that people who are doing media work in occupational safety and health actually take the time to look at some of the technical journals that exist. And particularly Lancet, and the New England Journal of Medicine both of which have important subjects in them every week.

Now, I'm not going to be speaking so much today from the perspective of NIOSH -- Tony Robbins will be here tomorrow -- and be talking about the directions that NIOSH is currently taking and intends to take; I really was asked by Frank Greer originally to talk a little bit on the basis of my experience when I was at OSHA -- and that's what I'm going to try and do.

Given the fact that we've been at NIOSH for a relatively brief period of time, it would be very much to my interest, anyway, if I had a chance to talk informally with people throughout the next couple of days, to talk about a lot of the things that we really can't cover in a 15 minute talk or a 20 minute talk, so that the degree to which we have informal communication I think is going to be advantageous to all of us.

Now let me just say, the question that was posed on all the posters -- is there an occupational disease epidemic -- certainly a controversial issue, at best.

Let me just remind you that when I was at OSHA, I was responsible for the development of two principal health standards -- one was the standard for cotton dust, and the other was the standard for lead. So my experience in the last couple of years has been very much conditioned by looking at those two particular substances. And I think if one takes a look at the exposure to lead in this country, and if one takes a look at the exposure to cotton dust, and then asks that question -- I think the answer is clearly yes. And that in a word, there is an epidemic, an occupational disease epidemic.

And I think that we have to confront it directly, there are clearly people who will disagree -- but I think in my view, based on that experience, I would have to say that there is no question that there is an occupational disease epidemic. It seems to me -- and I'm speaking now in qualitative terms; I'm not going to try and spend a lot of time talking quantitatively today, I don't think that's necessary here.

It does seem to me that in large part, it depends in part on the question of attitude as to how one looks at the issue, and I've seen, in a sense, both sides -- but I think that the bottom line to me at this point anyway, is that when one goes into the workplace, when one looks at the issue of lead in the workplace, and one looks at the issue of cotton dust in the workplace, when you look for disease in the workplace, you'll find it. You'll find it throughout industry. And I think that's a reality which we haven't paid enough attention to.

I think if one goes into the workplace and says I don't expect to find disease, lead disease, until one reaches blood lead levels above 80, 90,

100, 120 -- but if one takes that point of view into the workplace, you won't find occupational lead disease, because in a sense, you weren't looking for it.

But the degree to which one takes the time, makes the effort and takes the steps required, you will find significant levels of occupational disease in the workplace, and here I'm speaking primarily about old chemicals -- not new chemicals. I think Dave Rall will touch upon carcinogens in the future.

My point is simply that when one looks for it, one finds it. And I think it's a problem that clearly exists and is clearly growing. We're really seeing, it seems to me, the effects of exposures from 20 and 30 years ago, to a large degree. We aren't looking really at the effects so much right now of immediate exposures because of the issues of latency which everybody is familiar with, because of the issues of how a chronic disease develops.

It does seem to me that very often when one talks about disease in the workplace, the focus has been too much on the acute situation and not as much as Bert pointed out, on the chronic disease development issue -- that people look for the manifestation of acute lead poisoning, rather than the subtle behavioral changes that occur over a very long period of time, and that the degree to which one talks about the lack of occupational disease, say, for example, in a lead battery operation, is basically because to some degree, they're looking at problems from an acute point of view and not from a chronic point of view.

I think that at this point in American history, that occupational, and

of course, environmental health, are the most important health problems that we have today in this country. I think they are particularly important, and I would suggest to you that in the decade of the 80's and the decade of the 90's, there's going to be -- occupational health will be a major social issue in the United States, which we're gonna have to confront on a day in, day out basis.

It's not an issue which is going away, it's not an issue which is simply going to stay quietly festering in factories throughout the country -- because I think that there is a development of which this conference is only one example -- of an immense interest developing in the area of occupational health, and I think, as I say, I suspect we'll see that on the increase.

It's certainly necessary for that interest to increase if we're to deal with the legacy of the future which we are currently creating.

But most importantly, why I suggest that occupational health is a major issue at this juncture, and will continue to be, is that these are diseases in the workplace that can be prevented -- and I think that was what Bert was trying to talk about in the beginning, that the diseases associated with the workplace can be controlled if exposure to toxic substances are controlled.

Now, there are those who will argue that that's very costly. But when one really begins to look at it as we did with cotton dust, and we actually had a mandate from Congress, were requested by Congress, or ordered by Congress, more appropriately, to look at the cost-benefit relationship to the cotton dust standard. What we found was that the

benefit-to-cost ratio action was ten to one, that the benefits far exceed -- the benefit of the standard and of controlling cotton expsoure in the workplace, far exceeded the cost of the implementation that would be required in terms of the engineering controls, the control technology.

Now, one of the things I did want to say is that we're gonna touch on a very few things here. We've prepared some materials at NIOSH which will talk about some of the most recent issues that we're addressing, and I'll be happy to talk to people informally about them, but you should realize that really, we're going to be touching primarily here on two principal hazards; that is, hazards to the reproductive system and hazards associated with carcinogenesis.

To realize, in a sense, that's a very, very large area and an increasingly important area in both -- especially with respect to reproductive effects. But we are leaving out, for the purpose of this conference, a whole host of other areas that need to be markedly explored, and let me just mention a few.

There will be very little, if any, discussion of neurologic diseases in this conference, even though we all know about leptophos, even though we all know about the ravages of kepone even though we know about carbon disufide, and the effects of methylbutylketone and so on and so forth -- that we've seen the results, we have seen the diseases associated with exposure to certain substances which bring on occupational related neurologic disease, and yet, I think we won't be able to talk about them here. And I think it's a crucial area which deserves more attention, and we intend to give it more attention in the future.

Secondly, we're not going to be talking about the increasing growth

of asthma conditions; that is, occupational related lung disease from exposure to toxic substances which we believe is on the increase, not simply in the case of asbestosis or silicosis, but a wide range of diseases associated with exposure to toxic chemicals, producing upper airways disease, producing asthma, and so on and so forth.

We're not gonna be able to talk about biological hazards, even though the significance of those is increasing, and we're not gonna be able to talk about interactive effects -- the effects associated, for example, of one chemical acting in a synergistic fashion with another.

And lastly, of course, we're not going to deal here with the issues of safety research. All these areas are immense in terms of their significance, and I suggest that they're growing, and I suspect that we'll have to have another conference in the future to address them.

Let me just go back to a point that I think that I really want to take a few minutes and focus upon. And that was the issue that I raised earlier -- which is if one goes into a workplace, and let me use lead as an example -- if one goes into a workplace with the notion that there may be disease there, that if one goes looking for disease, one will find it. And that's what we found, much to our horror, when we started to work on the lead standard.

Now, as Bert said, lead poisoning, as we all know, is not new -- Pliny talked about it, Hippocrates talked about it -- it's not an exotic chemical, it's made from petroleum products that leads to the angiosarcomas, or the other cancers that we've become aware of. It's a substance which people had thought was controlled, that was thought had

significant effects, but probably were under control after 2,000 years.

I'd submit to you that in fact, lead is not under control in the United States, that it is in fact, a national disgrace to the degree to which lead is not in control in the workplace in this country -- given the fact that it is probably one of the most studied subjects in the history of occupational science; it is a substance which we've known about for a very long period of time and its toxicity, and there is no excuse for the fact that into the 1980's, we're not gonna have the control technology implemented in the lead industry such that workers' exposure will be reduced to levels which are safe.

That, I would submit to you, is in fact, a national disgrace, and is a continuing disgrace that will confront us for an extended period of time.

What we've found as we begin to look at lead in the United States, is we have found first that the standards that existed in OSHA were not met -- not met simply by, and I'm talking about the 200 microgram figure here, and I could describe places -- Ron McCann from this region in OSHA, could tell you places in the Chicago area where the lead standard is exceeded not just by 205, 210 -- small changes -- but enormous changes. People exposed to 5,000 micrograms of lead, 3,000 micrograms of lead; where the exposures are horrendous at this period of time.

It's not simply -- what we found was it's not simply an issue that the old lead standard was not being met, it was being exceeded in large numbers, as we began to look around the country, so that the controls that did exist and could exist, were not -- or had not been implemented. And what we also found was that even though lead had been studied to a far

greater degree than probably any other substance, that people still, in fact, did not recognize much of the disease associated with it.

People did not recognize the significance of lead with respect to the development of kidney disease -- and Richard Wadina, a nephrologist from New Jersey, discussed the fact that there may be as many as 100,000 cases, preventable cases of renal disease in the United States from exposure to lead.

That runs about $200 million a year in terms of dialysis if those, if only 10% of those afflicted with renal disease go on to dialysis. Here in 1979, or 1978, we did not recognize the significance of renal disease associated with lead exposure after the years and years of study.

Even though in the last century, there was significant research on the reproductive effects associated with lead, that we still in fact, were in a debate whether or not lead had effects on the male -- and there's no question at this point, of course, that there are significant effects on both men and women with respect to affecting their reproductive capacities.

But that's another subject which has been studied in the last century, to a large degree, and yet, even at this point, there is a debate, there is a misunderstanding, there is the ignorance associated with the question of whether or not a woman should be excluded from a workplace because she's exposed to lead, and therefore, susceptible to effects on her reproductive system -- even though, we now know that the real issue is controlling the exposure for both men and women, rather than excluding women from the workplace.

And lastly, we really had not recognized how severe the problem of

neurological disease associated with the central nervous system and peripheral nervous system from lead exposure was that there were manifestations of disease in workers who had only worked for a very few months who had behavioral changes, who had other biological and objective changes in their systems.

So when it was all over, what we found was that, of course, the standard had to be lowered -- but the real issue is we had discovered that we had a substance which today, in 1979, was not controlled, that we did not fully understand the profound effects that the substance had on people, and finally, we did not even have a sense about how long it was going to take to implement the changes that were going to be required.

We're not talking about 50,000 people -- we're talking about 300,000 people, 100,000, 200,000, or whatever the numbers may be -- but significant numbers of people.

And we found, lastly, workers in a secondary smelter in Indianapolis who were becoming permanently disabled, but were also being chelated with --given chelation therapy without their knowledge, and that's one of the key issues I think that we need to raise in this meeting and in every other meeting we go to when we talk about the occupational health, occupational disease, and that is the issue of the right of the worker to know what the chemical is that they're working with, and the right of the worker to know what the effects of those substances are on their person.

Because the right to know still seems to me to be one of the fundamental issues that needs to be addressed in this area, so that we can avoid the kind of chelation therapy that has gone on in Indiana.

So, the real issue, it seems to me, in the future is not strictly going to be one of research and science the real issue in the long run, and we at NIOSH will attempt to do the kind of research that will demonstrate the problem, define it, quantify it and describe it -- but the real issue is, how do we take that research and implement it to achieve the kinds of controls that are gonna be required -- because the bottom line, ultimately, is the implementation of control technology to reduce exposure to lead or vinyl chloride or RCME or any of the substnces we're talking about, so that the diseases associated with disease in the workplace can be prevented and not treated, because as we know, there is no theraputic relief for most of the diseases in the workplace that we find.

So our ultimate issue now, it seems to me, is how are we going to take the process from one of scientifically identifying the problem, to implementing the kinds of controls that are going to be required. And that really seems to me why I said at the outset that we're talking about a social issue in the 80's as not simply a scientific issue, which is how are we, yourselves and ourselves, the link between the scientist, the media, the public and the worker, going to function in such a way that the controls be implemented to eliminate the exposure and eliminate the disease.

I think we exist in a kind of period of time where there's a growing interest, as I said, in occupational health -- but there's also a kind of growing conservatism at the same time; there's a kind of push towards the cost-benefit analysis, a push towards the issue of whether or not we can, in fact, afford to control exposures in the workplace, so that on the one

hand, even though we have expanding interest in the science, expanding interest in the problem, we also have a contracting framework in which we are forced to live in.

Now how that goes, how we move ahead in this country in the next ten years with respect to this issue is going to have both those things affecting us.

And it seems to me that that beings me to the point that I really want to make -- is that your role, then, in defining the problem. describing it to people who are, our constituency, the public, the workers, management, so that they themselves can be part of the process that leads to the reduction of exposure in the workplace.

But that tension is gonna be with us, the tension on the one hand, of the cost-benefit, and of the cancer on the other -- and how we finally address that is really gonna be in large part -- much of the burden is gonna be on you, as well as ourselves, and I would say, just in closing -- I think occupational health is really a kind of window into which we look at the next 20 years in terms of a lot of changes that are going to be occurring within the workplace.

But I think at this point, occupational health and occupational disease is really a fundamental issue which we need to address and bring to the public so we can achieve control. Thank you.

DR. CARNOW: Thanks, John. Our next speaker is Dr. David Rall, who is Director of the National Institute of Environmental Health Sciences, and has been Director of this very active National Institute since 1971. He became Director of the National Toxicology Program last November, and

has been very active in the sciences of toxicology with many publications and so on. I'm delighted to have him on our panel.

He will discuss with you Chemical Hazards: When to Act? Dave?

DR. RALL: Thank you very much, Dr. Carnow. Ladies and gentlemen, Chemical Hazards -- When to Act? It is not an easy question to answer, and I will try to review some of the science base as I understand it, that gives us clues as to when to act and give you what I must say is simply my personal feeling as to when we should act.

Now one may answer that question very simply. When do you act? As soon as you have evidence that you can prevent disease and death -- and that's a simple declarative statement, but you know and I know that life in the bureaucracy or a labor union or a university or a corporation, or even in life itself, is hardly that simple. What does it mean? To translate this statement into regulatory, responsible regulatory action, requires the answer to these questions -- what kind of evidence, what's the nature of the evidence that's adequate, and how much evidence do you need?

Now I think I am convinced I can give you a clear answer on the first -what kind of evidence is needed? I think science has moved very rapidly in that area, and I will spend most of my time discussing that with you.

How much evidence is really, in the best sense of the word, a political decision. What is the will of the people, balancing off increased risk to workers against increasing cost to industry. This is, I view, in the best sense of the word, a political decision. I can give you what I view are the scientific facts behind the way I would handle it, and I will tell you what I propose to do.

Now what kind of evidence, what's the nature of the evidence that we should look at when we're trying to decide whether we should act -- two kinds; one that comes directly from observation of human disease, and the other, that comes from observation of disease in laboratory animals, which are being used as a surrogate for humans.

And let me first deal, and most extensively deal with evidence from laboratory animals.

Can the results of laboratory animal studies be used to predict, for toxic effects in the human population? This I think, is the critical question. For most chronic effects, most chronic toxic effects, we know really too little from human studies to attempt a clear answer to this question. However, in the field of chemical carcinogenesis -- the ability of chemicals to produce cancer in animals, laboratory animals, and in that interesting species of animal that we set aside and call a human being -- we know rather much more.

We have evidence in laboratory animals, and through a variety of circumstances, we have evidence in human populations. And these data parallel chemical carcinogenicity data from laboratory animals and from human exposure, are really amongst the most precious data possessed by the biomedical community -- because, really, the enormous human suffering involved as these data were developed and then acquired by the scientists, and because of the possibility that the intelligent use of this data can prevent untold human suffering.

Now, let me introduce, briefly, the International Agency for Research on Cancer, which we call IARC -- that's part of WHO, it's in Lyon, France,

and it has been for the last decade -- using international expert committees, evaluating evidence relative to the carcinogenicity of chemicals. Almost 400 compounds have been reviewed, and Lorenzo Tomatas, the Director of that part of the agency, has recently analyzed the results of the reviews of these compounds, dealing with both data from laboratory animals and from human populations.

I quote him -- "Twenty-six chemicals or industrial processes are associated with, or are strongly suspected to be asociated with the ocurrence of cancer in man." Now I will not go through this list, I have this list, and I'll be glad to talk to anybody that would like to see it.

There are five industrial processes for which the chemical identity of the causative agent is not known, but which clearly are associated with cancer. There's strong evidence that one or more materials in each of these five processes is carcinogenic in laboratory experimental animals. Now the other twenty-one are single, identified chemicals, for which there is strong evidence of carcinogenicity in man. Now, in sixteen of those twenty-one there is perfectly comparable data in man and laboratory animals. And let me discuss now the other five.

Arsenic, which we have known for many years is associated with lung cancer and skin cancer, has not been shown to be carcinogenic in laboratory animals. Laboratory animal studies on four others -- benzene, chlorophenical, oximetolona, and phenacitin, at the time this report was written, were deemed not adequate - not adequate to say yes, and not adequate to say no.

If we look at recent data on arsenic, we find that arsenic is

involved in inhibiting a kind of DNA repair process. Now, science tells us when you interfere with DNA repair, this may further the production of cancer, because repair is one of the ways the body protects itself against carcinogenic agents.

This is tentative evidence, but it suggests that arsenic may in fact be a co-carcinogen or a promoter, and this would be thoroughly consistent with the human evidence, and would be thoroughly consistent with the idea that strict exposure limits should be present for arsenic.

With regard to benzene, both Norton Nelson at NYU and Maltoni's group at Bologna now have that data very strongly implicating benzene, as a carcinogen in rodents.

There is new data from a variety of sources which has been challenged by the company that makes phenacitin that phenacitin is carcinogenic in laboratory animals, and I think this is simply a scientific controversy that must be reviewed.

It is important to note, also, that, of these 21 compounds, five of them -- 4-aminobiphenyl, diathelstilbesterol, mustard gas, vinyl chloride, and amphlatoxin -- were clearly shown to be carcinogenic in laboratory animals before evidence developed that they were carcinogenic in man. In these five, the laboratory animals predicted what was going to happen in the human population.

I think two more clearly could be added to that list -- bischloromethylether clearly was shown to be carcinogenic in a variety of systems before its association with cancer was shown in a number of plants.

Second, the medical use of estrogens has now been shown to cause

endometrial cancer in women, and some preliminary evidence of DES causing breast cancer in exposed women. This was clearly predicted by laboratory animal tests going back many, many years.

It seems to me that we are in the midst of a revolution in the way the scientific community can identify carcinogens. In the 1770's, Percival Pott used epidemiological tools to identify the cause of scrotal cancer.

Two hundred years later, using laboratory animal studies, the scientific community has identified at least seven chemicals later shown to be carcinogens in men and women.

I think, clearly, regulatory agencies must begin to put primary reliance on the results of properly conducted laboratory animal studies.

Now, I think we're all aware there is much resistance to this, and I'd like to spend a few minutes exploring the reasons for some of this reistance. First, many very good scientists tend to focus on the intimate details, the differences in metabolic patterns between this species or that species or strain, or between excretory rates in this species or that species.

One strain of mouse may respond to a chemical with a cancer different from another strain. Some strains are, in general, very resistant; some very sensitive. But looked in the aggregate over the very large experience that we now have, and this is precisely what the International Agency for Research in Cancer did -- the very, apparently, striking differences wash out and the pattern of consistency is seen. The distribution of the trees may vary -- but the forests remain.

And we must also remember the human population itself is a very

diverse population, and many of these differences seen in laboratory animals reflect, and in fact, predict, the variabilities seen in exposed people. Some are sensitive, some are resistant.

Now many basic scientists fear, and with perhaps some reason, that support for testing chemicals for toxicity and research in that area -- the applied research necessary -- will drain limited amounts of federal research funds from other areas of vital basic research, and I think this is a not unrealistic fear which I think we all regret.

I think it takes a great act of faith for many of us to believe in and use the results from a mouse or a rat or a hamster. Are you a mouse or a man? Well, I would prefer to be an animal aided by a laboratory animal, than somehow related to a vegetable or a mineral.

Animal studies are easy to ridicule, and we've had a lot of that in the last couple of years. Secretary Marshall pointed out that saccharin is dangerous to the health of Canadian rats. It would take 800 bottles of this or that a day to cause--I might add--an enormously high incidence of some cancer.

There are reasonable explanations for the use of rodents, the use of high doses, and so forth -- but these take time, they take concentration, to be understood, and they are simply inappropriate for a cartoon or a 30 minute TV spot.

And finally, I think it's important to realize and admit that it may well be in the interest of the sponsor or the manufacturer to ridicule and question animal cancer tests. If regulatory delay is achieved, the product can still be marketed, and profit can be made, or the expensive control

technology need not yet be installed.

Now the claim is made that animal tests are not perfect and I agree --and I think everyone that works with them would agree. But I fail somehow to detect perfection as the critical factor in other important public policy issues. Economic forecasts, I think we all know, are not perfect, and I think they are not perfect by a much greater margin than forecasts from animal tests, and yet -- we base public policy decisions involving more dollars than I know how to count on such forecasts.

Weather forecasts, as we all know, are not perfect -- and yet we order our private lives and base decisions involving many dollars on weather forecasts. We do rely on these admittedly imperfect forecasts, because we know of no better system. Though flawed, they're the best we have. Neither, it seems to me, the readings from chickens' entrails nor the Farmers' Almanac beats Freedman and Samuelson and maybe Ray Marshall or Acu Weather.

And finally, we do not demand perfection in our laws. Is the 55 mile an hour speed limit appropriate for Cale Yarborough or Donnie Allison, as well as that apocryphal little old tennis shoe wearing lady from Pasadena?

Of course not. But it is sound public policy -- balancing energy, economic and health considerations.

Let me speak briefly about the other kind of evidence that we can use -- primary reliance on proven human disease; the use of the results of epidemiological studies. In rejecting this option, I do not wish to imply I reject epidemiological studies. Such studies are vital for many important reasons, and their support must be continued.

But I do not think they can be used as the primary or major technique to identify occupational hazards, and this is really true for one primary reason -- epidemiological studies cannot tell what effects a material will have on a human population until well after the humans have been exposed and have become ill.

Human epidemiology has great appeal. A demonstrated relationship between a chemical and a human disease is simple, straightforward and explainable. I much prefer, however, that we study chemicals in animals first, using the increasingly well developed techniques we have, and prevent human disease by controlling chemicals, rather than studying human disease caused by chemicals.

Now, I'd like to just comment in passing that it's interesting to note that most OSHA carcinogen regulations, and in fact, most health regulations in the entire federal government are based on human evidence.

Very few have been based only on laboratory evidence. I think it's time we began to change that. Now how much evidence is necessary? I'll spend little time on that; there is certainly a spirited debate any time evidence appears that a chemical is carcinogenic. I think this evidence develops rather more heat than light, but let's remember that such chemicals as bischloromethylether -- the first indication that it was animal carcinogen came in 1967; the human data came in 1971, and regulatory action came some years after that.

With vinyl chloride, the first evidence that it was a carcinogen in animals came in 1971; human evidence did not come until three years later, and regulatory action some time ago. I think we must be alert for those

early signs that a chemical is a hazard.

Certainly, the development of the short-term mutagenicity tests and similar tests will help. The history of the fire retardant "tris" shows that Bruce Ames identified "tris" as being highly mutagenic a number of years before the animal tests were completed, shown to be positive, and "tris" was removed from children's sleepwear.

With regard to human evidence, we must be aware of inadequate studies. Inadequate studies, particularly, that purport to be conclusive.

Dr. Froines suggested that science reporters read the New England Journal of Medicine, but you read it with great care. In the current issue, there is a report on metronidazole an anti-fungal drug often used for trichomonal infection. Metronidazole is a mutagen and a carcinogen. The first report of it's theraputic effectiveness came out in the late 1950's, and this article describes the history of 700 women from 1960 to 1969, who were treated with metronidazole in that period of time.

In that group of women, there were 11 cancer deaths, expected: 7.1. Let me quote now what the article says:

"Although the standardized mortality ratio of 1.5 calculated for the 11 cancer deaths was higher than expected, it was not statistically significant. Thus, we have yet to observe an excess of cancer deaths in the exposed women."

Well, what about those extra four women that died? I find it very hard to see this very explicit statement when, in fact they did observe excess cancer deaths -- they simply had not reached a level of statistical significance. And this is something I think we all have to be careful about when we read and when we write.

is. It suggests that there is a less than one in 20 chance that results are strictly on a random basis, and this magical one in 20 or P is less than .05 value, was given to us about 50 or 60 years ago in the context of easily repeatable laboratory experiments, or agricultural field trails that were not hard to simply set up again to see if, in fact, the experimental results were a statistical quirk or not.

I have not seen discussion as to whether or not, for serious public health hazards, this is a reasonable level, in situations where the experiment cannot be repeated for many, many years. I don't know whether one in 20 is reasonable -- I do not suggest that we do anything but consider this; I think it's an important area.

And, back to the New England Journal of Medicine paper -- I think many of us in this room understand that the induction of cancer takes as many as 25 or 30 years commonly, and to indicate that a substance is not carcinogenic after maximum of 18 or 19 years of observation and an average of 12 years -- is essentially a meaningless statement.

Well, chemical hazards -- when to act? I've tried to review some of the problems. I'm convinced that we know enough now that well designed, well conducted, long-term animal tests can be a signal to act. One test, if it is well conducted with adequate numbers of animals and if it is well designed. It should initiate consideration of regulatory action, supporting ancillary studies to yield either supporting or contradicting data can be developed through this review process, and of course, should be used in making the final decision.

I'm convinced we know enough now to listen to what the animal tests

are telling us, and I think it's time we started listening.

Thank you very much.

DR. CARNOW: Thank you, Dr. Rall. We're gonna have to have a discussion about the human versus the animal, epidemiology versus -- somebody said those are only statistics, and the answer to that was -- well, what else is there?

Our next speaker is Tony Mazzocchi, who is Director of Occupational Health and Safety for the Oil, Chemical and Atomic Workers Union. Mr. Mazzocchi has been working with this union in one capacity or another for the last 29 years, and has been involved in every phase of activity, and is particularly involved in occupational safety and health.

He will be talking about political issues of protection. Tony?

MR. MAZZOCCHI: Thank you, Dr. Carnow.

My dealings with the press over the years is that whenever one talks about an occupational disease epidemic, the usual answer is -- or the usual question from the press is -- we'd like to talk to a victim. That's the newsworthy aspect of it.

Most episodes of occupational disease epidemics are treated as separate episodes that are a result of aberrant behavior of a particular management group. Now, I'm here to convey at least my own view based on my experiences and observation that no disease epidemic is a result of aberrant behavior -- it's an integral part of the productive process. And I think unless one understands this dimension of it, we will never address the occupational disease epidemic, which no one needs to prove to me that it exists; I think there has been sufficient proof. The question is how do

we act upon it?

I think and feel strongly that occupational health is strictly a social, political, economic question -- and science, as Dr. Rall has pointed out, can act as an information gatherer, but essentially, the type of action that must take place once we understand the scientific data remains to the conflicting forces. Management and worker representatives, namely, trade unions.

Now I disagree with many of my friends who consistently raise the question of -- if we suppress pollutants in the workplace, that the cost to society will greatly reduce itself, and therefore, if only we could convey this information to management and to those who are responsible for the introduction of pollutants, things would be remedied.

I'm here also to suggest that the economic aspect of occupational health is that it's integral to the productive process; it's going to cost either way. The argument is over who pays. That's essentially the fundamental argument. The way work is now structured is -- workers pay. They pay with their lives, they pay with their health. And that's a subsidy that industry expects -- not consciously -- but in the very design and the nature of the productive system.

If we reduced the occupational health epidemic, significantly, we must reduce productivity significantly. The two are in conflict. You cannot have productivity escalating and have good health -- and I think the two groups in society, the most literate economic groups, understand this, who're not scientifically literate -- and that's management and workers, because their every day life is concerned with that dimension.

I think most workers could detail very specifically the fact that if you look at the deteriorating nature of work -- and it is deteriorating in terms of health, in the workplace, it's because, number one, we have less workers at work than we've ever had before in these facilities, there is more productivity -- not always the result that we're working harder, but as a result of the fact that there is a diminution of the maintenance of the equipment that's being used. And that a polluted environment is essential in order to maximize production in most facilities certainly the ones I've worked in and the ones I've worked in over the years.

And, that this imperative operates outside the will of men, it's not because the plant manager wakes up in the morning and rubs his hands and says, "I'm going to kill x amount of workers today" -- it's because the main task of any management person, as stated by management many times themselves, is to help in the maximization of profit.

And that translates itself at the workplace to do as much as you can and as fast as you can, and under any conditions that you can; and calculate the risk as an integral part of the process. If something is about to blow, you cross your fingers and you hope it won't. Or, if something is leaking, you cross your fingers and hope that nothing will happen. And -- statistics being what they are, and latency periods being what they are -- the occupational epidemic is not visible, and that's why we can't produce victims, because the victims themselves don't understand that they are victims. They have not been able to relate their disease with work exposures, because the system is designed to suppress information.

Now, the fight that we have been involved in has been to extract information so we can make decisions -- and management of course, its battle is to keep us from getting the type of information that will allow us to make the type of decisions that can affect change. That's the nature of this whole fight on occupational health.

Now, the dilemma is becoming more visible -- because we passed through this great latency period, especially in the petrochemical industry. We're seeing victims more and more. And workers, for the most part, not scientists or government, discover the nature of the epidemic. Untrained, knowing nothing about epidemiolgical skills, but observe that probably many workers are dying from a particular disease, or are afflicted by a particular disease, and we start working back from that point.

And usually -- in fact, almost in every instance that I've been involved in recently, we have found that the suspicion was confirmed only after the workers observed it, and then scientific tools were brought to bear. The scientific tools only acted to confirm what observation had in the first instance, identified the nature of the problem.

Now, pure anarchy exists in the workplace when it comes to not producing goods. We produce goods in the most scientific manner possible, and as fast as we possible can; in fact, all the great industrial scientific tools are used to make less people produce more -- and most of us who have been involved in time and motion studies and everything else, know that every device, scientific device, is used to maximize production, in order to maximize profit.

However, these same tools, existing scientific tools, are not used to

uncover the type of information that would allow us to act -- that's by design. That is not accidental. I would suggest that in the decade of the eighties, based on our own experience -- the only growth product left in a society that is entering probably into one of the deepest recessions it has known -- or depressions, depending on your point of view -- the only growth products are going to be birth defects and cancer. And they will become more apparent.

It's no accident that we don't have a National Cancer Registry -- the fight over cancer registry which will escalate over the next years is a fundamental fight over the right to know; the right to know who gets cancer, what type of cancer, where they work or where they live. Most people think that information exists. That's no accident. I'm sure that we will ultimately arrive at the point where that registry is in place. The next registry we need, which we should have had, is a birth defect registry.

Our union is the only entity in the country at the present moment who is methodically looking at what happened to the children of the people we represent -- because another creeping and gnawing suspicion we have is that our children have been impacted. This is based on casual observation by workers in casual discussions at the workplace.

It is no accident that no entity -- federal, industrial, corporate entity, academic, scientific, medical entity -- has looked at this question. What happened to the children of people who work in high-risk capacities, high-risk industries? That -- because I think whenever you look you see, and when you see, you act, or you attempt to act -- and an

action that grows out of birth defects will be a much more overt response than what grows out of what might happen to me as a worker. That's the nature of things.

Now the political consequences, and the economic consequences are of course, that any intervention in the workplace -- any intervention to make that workplace safer, to avoid what we're discussing here -- will cost. And it will intervene very directly into the profit-making mechanism. That has to be a fact of fundamental life that everyone must understand -- because that's what the fight is about. That share of the pie. This time it's not an economic pie per se, it's the health pie. Who dies is a fundamental factor that we fight over, what is statistically significant, as Dr. Rall talked about -- well, workers and management look at it this way, if we die, it's statistically insignificant; if the figures go the other way, then that's a statistically significant figure. The figures are there for everyone to see; we make them up as a work population. To the person who's afflicted, certainly, it is statistically extremely significant.

The right to know essentially means that everything that is known about the workplace should be known by the people who work there. Most civilized responses are, "Oh, we thought that is what was in existence" and that is not what is in existence.

The average worker in the average workplace in America, when he walks through, into a factory, knows essentially nothing about the substances that are in that factory -- we have been talking about this now for 10 or 12 years, and we still don't know for the most part what we work with, how toxic these substances are, their effect on the people who are breathing

them or having them absorbed through their skins or whatever other method of introduction. We still don't know. We don't know what happens to us.

There is certain epidemiological data, for instance, in our industry we'd like to know about, because there's a long history -- and it's available. But industry gives it to us in a highly qualified way, that industry which has agreed to give us some epidemiolgical data. They've arbitrarily established a cutoff date -- 1968 for mortality statistics, and I ask you whether a cutoff date for mortality statistics, as epidemiologist, whether that would be significant to us in morbidity 1972.

In those industries that gave us that information, as a result of some independent activity, along with the National Cancer Institute, we have found epidemics of cancer by virtue of some detective work that we were forced to do with a federal agency that was not detected in the data given to us by the companies. So we felt that it was inadequate data, it doesn't go back far enough, it doesn't tell us anything -- it's controlled data.

There is another dimension of the occupational health epidemic that the public, and especially the press, do not truly understand. We have rules -- established by the federal government. You're allowed to breathe in x amount of a particular substance in an 8-hour day. Well, American industry, in order to maximize production, doesn't hire a great many people today. You work -- those people who are part of the work force -- excessive overtime. And overtime is compulsory in most installations that our union deals with, and it's compulsory in a lot of other installations. And all the rules go out the window -- because if you're supposed to breathe amount of a substance in an 8-hour day, and you start working 12 hours a

day, those rules change.

— And there are some rules that say. "Fine. we compute for that additional overtime." Most times, in many instances, those rules don't apply. But in the final analysis, we don't even know because no one is counting and no one is measuring what happens to workers who work those 10-hour days, 11-hour days, and the amount of those pollutants that are regulated against -- there's nothing to measure them by in most instances. No one's counting. One assumes that someone's counting. In other words, the monitoring equipment that would monitor these substances aren't there. That goes for noise, especially. Where people are working at the federal limit, and they work overtime, the response is "Give them earplugs for the overtime so they're not subjected to this excess. They don't exceed the standard."

These are issues that I think the press must understand much more fully. The question has to be -- why is it that this occupational disease epidemic is occurring? And when you start asking the fundamental questions of -- do you know what you work with? Are you being given the data that we know companies accumulate? How do you act upon these questions?

These are the questions we would like to see the press start raising -- not the fact that x worker worked for 30 years in a plant and now is dying of a particular disease. That's newsworthy, it's a public interest story, but it does little to contribute to the type of change that must take place.

And I'd like to close on one note. In the 80's, there's another factor that's going to be the focal point of a major fight. American

industry, essentially, in my opinion, is going to admit to a great many of the problems, and we're going to be dealing with a different kind of response. It's going to be called risk assessment. Everybody's going to say, "Listen, work inherently is dangerous, but we're going to let you know what the risks are, and you make a choice" -- and in a time when there will be 10 or 12 million unemployed people, that choice is predictive -- someone will work where work exists, regardless of the risk.

Secondly, the great emphasis is going to be on -- whatever happens is your fault. You don't eat right and you smoke too much and you drink too much. And it's true -- most workers eat the wrong foods. If you've ever been in a factory with a vending machine where you get your main meal, you know about eating lousyng food and no one worries about the nutritional content of the food, and you have no choice of running down to the corner cafeteria which is 88 miles away.

And, secondly, of course workers drink a lot. I worked in the automobile industry. If I were still there, I'd be drinking a lot -- because work for the most part, is an abomination. And work alienation is what causes drinking and smoking.

And as I have said many times, those of us who do what we like -- and I do what I like -- I became a bureaucrat because I thought work was so awful, and I got out of the factory. Workers in these dead-end jobs and in jobs that are atrocious, will smoke and will drink, and it does not do us any service, those of us who are struggling against the occupational disease epidemic, to be told constantly that if you stop smoking and you stop drinking, the problem will go away.

I would suggest for those who advocate stop smoking, and I'm for people not smoking and drinking to excess -- that the institution of a 4-hour day, contingent upon no smoking and no drinking will find many takers among industrial workers. But in an 8-hour, 10- or 12-hour day, under the conditions that most workers drink in, the whole question of lifestyle is one that won't change -- and if you could conduct a poll, stand out at any steel mill or chemical plant or auto factory and ask how many workers, as they come out, "who jogs?" I would suggest that you would find that the answer to that is a very negligible proportion, that most people drag themselves home and then choose the escapes that we've been talking about.

I do not consider that to be a minor problem -- the lifestyle problem and risk assessment is the major political problem that we're going to confront in the next decade, as the victims become more and more visible. The cancer victims will become more visible -- we are seeing them; the birth defects will become more visible, and the substitute remedy will be around these two questions.

I'm sorry, my time has run out -- there were many other areas I'd like to cover -- maybe some of the questions later on; Bert, at this time I'll leave.

DR. CARNOW: Thanks, Tony. The next speaker is Dr. Bruce Karrh, who is the Director of the Medical Division of Du Pont's Employee Relations Department. He joined Du Pont in 1970 as Medical Supervisor at the Spruance Textile plant in Richmond, and later served as Assistant Medical Director of Du Pont. He'll be discussing problems of health care and pro-

tection. Dr. Karrh.

DR. KARRH: Thank you, Dr. Carnow. I want to express my appreciation to OSHA for the opportunity to participate in this important conference for representatives of the news media.

As Secretary Marshall said this morning, it's through discussions of various points of view such as these on the complex issue of occupational health that the media -- and ultimately, the public -- will have a true understanding of what is being done and what has to be done in the workplace.

Today I would like to discuss some of the problems which industry faces, including those of communication -- and some of the progress that industry has made in this area in the past. And finally, I'd like to touch briefly on the relationship between the news media and industry.

Let me start with one basic point -- prevention of occupational disease is being given the highest priority by industry, and we've made significant progress in this. However, one of the greatest impediments to progress is misinformation, and considerable misinformation is circulating concerning occupational health.

This hurts everyone -- including the worker. The reason I say this is that scientific decisions and regulations have to be based on accurate information to really get to the root of any problem.

Misinformation, on the other hand, breeds mistrust, and argue for needless politicizing of difficulties which we all should be jointly pledged to solve.

Let me cite two examples which recently have been raised by some

members of the journalistic fraternity, and most notably -- the Wall Street Journal. In a September 6th editorial, the Journal decries statistical misrepresentations which, honestly quoted, have the force of becoming fact, both in the media and in the eye of the public.

OSHA, in promoting this conference, asserts that 100,000 Americans lose their lives annually due to occupational disease. It's not surprising, then, that some of you in the media have reported this figure as Gospel. It's not.

As the Journal said in its editorial, the 100,000 figure includes many more deaths than can clearly be attributed to toxic substance exposures. But on careful analysis, you will find the number is an excellent example of highly questionable mathematical adroitness that adds to the dialogue over occupational health.

While dramatically lower figures such as those from the Bureau of Labor Statistics can be cited, the key point to understand is this -- neither the recordkeeping or the state of knowledge is adequate to permit either industry or government to issue conclusive statements concerning the dimension of the occupational disease problem.

Secondly, the Department of Health, Education, and Welfare recently asserted that 20 to 38% of all cancer in the U.S. is attributable to occupational factors. While some of the HEW statments are valid, many of its assertions and assumptions cannot be supported by the available evidence.

For example, HEW applied risk factors to current asbestos workers, based on World War II exposure levels, which were much, much higher than today's levels. HEW further assumed that most of the asbestos-related

cancer deaths from that period of higher exposure are yet to occur. The agency also used inappropriate estimates of the exposed population by using highest potential exposure, rather than actual exposure, and by equating workers exposed part-time to those exposed full-time.

Predictably, the 20 to 38% figures are starting to take hold, and to be quoted much like the 100,000 occupational disease death figure has.

I recently heard a television report that 40% of cancer can be attributed to the workplace, and I have to assume that this new figure is just a rounding off of the 38%. So I have to think, will it soon be reported as nearly half -- further confusing the public dialogue that continues on this issue?

But I'm sure that you agree with me, that any occupational disease or any incidence of cancer due to the workplace and exposures in the workplace, is deplorable. But the three to five percent figure that such authorities as Dr. John Higginson of the International Agency for Research on Cancer that Dr. Rall referred to, described the situation as much more accurate than the 38% figure.

Also, Dr. Phillip Handler, President of the National Academy of Sciences, recently at Northwestern University's Cancer Center, made this statement -- and I quote:

"The possible effects of all known man-made chemicals, when totaled, could contribute only a miniscule fraction of the total of all known carcinogenesis in our population."

This situation suggests that we all need to give more attention to the facts, and that's the main point I wanted to make by going through this

chronology.

With the facts, we may disagree about the methods of solution -- but at least we will agree about the nature of the problem, and hopefully, we will not politicize an issue that should not be politicized.

All of us with a role to play in protecting employee health should be cooperating. One area of cooperation that we could start on would be in trying to reduce the critical shortage of occupational health and safety professionals in this country.

A recent NIOSH study concluded that while 540 additional occupational physicians will be needed every year from 1980 through 1985, only 57 will be availabe for hire. While 690 industrial hygienists will be needed, only 350 will be available. And while 1,140 safety professionals will be needed, only 615 will be available.

It's evident, then, that we must use all we can to increase the academic programs and student enrollment in these areas. But we also must use the professionals who are currently available in these disciplines as wisely as we possibly can. We can't afford to use them needlessly opposing each other in governmental and public forums when we could cooperate more effectively and achieve our common goal.

I'm confident, though, that many of our problems can be solved, and I had the opportunity to testify before the Senate oversight hearings on OSHA last fall, and at that time, heard Secretary Marshall's comments, which I applaud. "I realize," Secretary Marshall said, "that OSHA's past performance has, at times, dismayed those of you who have labored so long to protect our working men and women. Part of the problem is a lack of

understanding about OSHA's present performance as compared to the agency's past record. We're ready to make our case, to admit our mistakes and errors, to learn as much as we can from the process of discussion and debate, and to further improve our program."

A similar attitude applies to industry, and we hope to receive the same considerations that OSHA is seeking. Industry and government must try to understand each other's needs and past shortcomings, but still resolve to move forward -- in that way, all of us will benefit, and the process of discussion and debate will be much more constructive.

Progress has been made -- and let me use the example of my own company, Du Pont, as a way in which occupational health has been managed. The only reason I use Du Pont is not because we have the only, or even perhaps the best program, but it's one that I think is most and most familiar with, and because it is typical of what many members of industry are doing and are achieving.

In overview, the key elements of Du Pont's system include thorough high-quality physical examination and medical surveillance programs; a highly reputable toxicology testing program; pioneering efforts in the area of epidemiology as an occupational medical tool; and a commitment to candor and openness so that those who need to know about potential health problems, particularly Du Pont employees, are well informed.

Our formal occupational medical program goes back to 1915, and the concept of preventive medicine forms its backbone. We strive to protect employee health by reducing exposures to known and potential health hazards

in the workplace, and by carefully monitoring employee health. Just as we work with the concept that all injuries are preventable on the job -- we firmly believe that all identified risks are controllable.

The keystone of this program is a baseline health inventory, which includes a preemployment medical history and a physical examination for each new employee. Data gathered from these early evaluations tell us whether any preexisting medical condition exists which may be aggravated by exposure to certain substances on the job, and would make that individual an increased risk.

Today, we give comprehensive medical examinations annually to all employees over 40 years of age, and every 2 years to all employees 40 and under. The basic content of these exams is an interval history and physical examination which includes a chest X-ray, vision test, hearing, pulmonary functions tests, urinalysis, and a series of blood tests, blood chemistry and hematology tests and electrocardiograms at periodic intervals.

Just as crucial as our medical exams, however, are our ongoing special medical surveillance programs. These are performed on employees who have potential exposure to toxic substances, and they may be done more frequently than a periodic exam, or they may have an expanded content. These tests -- some of which we've been doing since the 1920's -- have taken on added significance in recent years as we have learned more.

These surveillance programs are varied and are tailored to deal with specific work hazards. In order to determine what protective measures may be needed, company physicians and toxicologists developed an understanding

of how a chemical could be absorbed into the body, what organs could be affected and what exposure levels would be safe.

We also use biological monitors where we can, such as blood or urine tests, so that we can detect any excess levels of material which a worker may have absorbed into his body.

Another important element of our medical program is epidemiological surveys. For over 23 years, Du Pont has kept detailed epidemiological data concerning morbidity and mortality among employees and mortality among pensioners. The data include registeries in cancer, heart disease and sickness absenteeism among current employees.

Results of these studies provide valuable information when we're looking for trends which may indicate possible health implications in certain employee groups. We also use them as a tool in the design or the redesign of our production and employee protection systems.

While epidemiology is a valuable tool in the search for possible occupational factores in employee health problems, it is by far not the only one. Where it relies on statistical analysis of human population groups, toxicology, as Dr. Rall mentioned, relies on experimental testing and analysis of laboratory animals.

Accordingly, toxicology and allied sciences constitute another important element in our health protection system. Du Pont's Haskell Laboratory for Toxicology and Industrial Medicine was established in 1935, because we became concerned about inadequately understood occupational health problems.

Today, the Laboratory has a staff of about 200 people, and its

research covers a broad spectrum of animal, bacterial and aquatic tests, some of which may take up to 3 years to do, and can cost as much as three quarters of a million dollars.

The findings of Haskell's studies, whether on new compounds or existing compounds, are of great value in our efforts to provide employee protection. They're an important factor in determining whether to produce a compound at all, and are useful in design or modification of industrial processes to achieve an acceptable level of safety.

Our recent experience with a chemical, hexamethylphosphoramide which is abbreviated as HMPA, and is largely used as a laboratory research solvent, is a good example. HMPA is used by us as a solvent in the production of an industrial fiber.

Tests at Haskell Laboratory indicated that rats developed malignant nasal tumors at exposures of 50 parts per billion of HMPA, but showed no detectable effects at levels of 10 parts per billion over their full lifetime.

We had previously manufactured and used HMPA at a control level of 100 parts per billion, based on its then-known toxicity, but, as a result of our new data, we lowered our potential exposure 200-fold, to 5/10ths of a part per billion -- and that's where we're operating now.

The new scientific data enabled us to manage a real occupational health problem, and to alert our employees, governmental agencies, and the media to the potential health problem from this commonly used research laboratory solvent.

The past failures on the part of industry to adequately protect

workers can much more often be attributed to limited knowledge than to irresponsiblity. I can cite examples in my own company, such as our past experience with bladder cancer among some workers. However, the significant point is that today, both government and industry have much more knowledge, and have dramatically improved tools to help us manage occupational health, and to assure that our employees are protected.

Finally, let's consider the news media's role in dealing with occupational health. The very fact that so many of you are here today is a positive sign that you're concerned with understanding the scientific issues relating to occupational health.

Speaking for Du Pont, we will meet and talk with you and answer your questions. We only encourage you to take time to understand better the complexity and scientific basis for what we say and for what we do. We also ask that you meet us with an open mind, and finally -- like others here today, to recognize that we, too, consider prevention of occupational disease a matter of highest priority.

Clearly, much remains to be done in occupational health -- the challenges of improving work environments and of protecting employees belong to many -- industry, sicentists, the government and the media. Companies in the chemical industry have many of the programs in place, the organizational commitment and the will to succeed.

Refining and blending all of these resources into broad, coordinated efforts is the key for today and for tomorrow. I have full confidence that the solution to our occupational and environmental health problems lies within our grasp, and I think with everyone's cooperation, we can certainly reach it.

Thank you very much.

DR. CARNOW: Now that you've heard from academia government labor and industry, we're prepared to hear from you -- we'll be glad to answer questions that you might have. We would like you, if possible, to use a microphone. There's one right here -- and to identify yourself so that it can get into the proceedings.

We would like you to limit the questions; we would like you not to give discussions. The experts are all up on the platform!

And I have a few announcements, too. One announcement that the lunch will be served directly across the hall in the Tally Ho Room. I expect about 10 minutes after we adjourn. We have about 20 minutes for questions.

I think if you have questions, it'd be good to line up here so that we can save time.

MS. JUDY RANDALL: These are very simple questions; I'd like to ask Dr. Froines later if he'd see me for the Lancet reference and also for the name of the doctor in New Jersey.

But beyond that, I would like to know how it is possible to give a chelating agent to workers without their knowledge. Now, I realize you could give something to them without their knowledge, but how is it possible that they are not aware that they are getting anything, which I gather was what you were talking about.

DR. FROINES: No, Judy, I didn't mean to say that they weren't knowledgeable about the fact that they were being chelated, but it was the effect, the potential effects of chelating I was referring to.

MS. RANDALL: Well, precisely, what were they told? They were being

given antiluicide or something, I presume, and they weren't told why they were being given it?

DR. FROINES: They were being told that the reason to take the chelating agent was precisely to bring down the blood leads, which is the reason, but it's not sufficient, clearly, and it was not being used, in a way--it was being used to reduce blood leads, period, on an ongoing, day-by-day basis.

MS. RANDALL: Yeah. And they weren't being told of possible side effects? Was that the basic problem?

DR. FROINES: Yes.

MS. RANDALL: Yeah. And what are the possible side effects?

DR. FROINES: Mainly, kidney disease.

MS. RANDALL: Okay.

DR. CARNOW: Let me just add one thing; in one plant that we were in, they were given pills which they were told were vitamin pills. They were versinate which is a chelating agent. I just wanted to mention that. John? Sorry.

MS. RANDALL: Thank you.

MR. AMBURG: My name is Matt Amburg, I'm with the International Union of Electrical Radio and Machine Workers, and I would address my question to Dr. Karrh. I got the impression from what he said that the Du Pont Company is a typical one in what it does in its concern.

And I was just wondering how many other companies which produce chemicals of one sort or another do all the things that he tells us that the Du Pont Company does in the way of testing for the effects on people.

I would like to know to what extent the Du Pont Company and these other chemical companies routinely have been sharing their data with the government and with the public -- and I would like to know specifically, for the workers in plants which use the products developed by the Du Pont Company and by other companies -- to what extent is the knowledge that Du Pont has and that the other chemical companies have about the health effects of these substances, these products of yours -- to what extent are you seeing to it that the workers in the other factories, the using factories, are being told about that? Because I will tell you right now that I do not believe that the workers in the electrical and electronics and other industries are being told what it is they're working with, and what effects these things can have upon their bodies. On their health.

DR. CARNOW: Dr. Karrh?

DR. KARRH: I've got several questions, and then a couple statements. But to what extent we test or other companies thesting, I think what I said was that what Du Pont does is typical of what the other major chemical companie do, and as far as I know, the other chemical companies, many of them have the same type laboratory facilities that we have; they do their own testing and where they don't have in-house facilities, they contract testing out.

I'm really not qualified to speak for the others, but I am familiar with many of their toxicology laboratory programs.

To what extent we share data -- any data that we develop that we feel has a value to others and is pertinent to the issue of occupational health and safety, we share. I mentioned HMPA as an example, and those data were immediately submitted to the media, the public media, an editorial or a letter to the editor of Science was prepared, and was sent to Science and

subsequently published to make sure that people who were using HMPA in research laboratories knew of these findings, and this is relatively typical of the type of steps that we take to share the data that we have.

Now, the last question -- to what extent do we share data with the people who buy products from Du Pont, whatever data we have on the toxic hazard of a material, we give that to the person, to the company that buys the product from Du Pont, and we pass it along in the form that we have it so that they then will know what the hazard of the chemical is, and they can take adequate steps to inform and protect their employees.

MR. AMBERG: I didn't ask to what extent you shared that information with the buyer; I asked to what extent you're sharing that information with the workers in the plants that buy the product.

DR. KARRH: I don't know how we have access to the workers in the plants who buy it, except by labeling, and we do label the material with the toxic hazard that is significant to the material on the label itself. There is a Product Bulletin that goes with products, also.

MR. MAZZOCCHI: I'm going to speak for the rest of the chemical industry. Is this mike on? I'll speak for the rest of the chemical industry -- not for them, about them, and I'll accept that Du Pont somehow is highly special when it's unionized, we'll check the facts, but up until such time, I'll accept Dr. Karrh's description.

However, let me -- I'll agree also, with you, Dr. Karrh, that we ought to proceed from the facts. That's what this discussion is all about. Those who have the facts, to share them with those of us who can make some judgments -- and we may come back and say, "You know, there really isn't a

problem, it's all been a figment of our imagination." Show us the scientific facts, share those facts.

For instance, you mentioned at Du Pont, that it has epidemiological data on pensioners. We're asking the oil industry and chemical industry, tell us what happens to people -- tell us how long they lived after they retired. Or what did they die of?

They have refused to share any of that information. We are being forced into hearings before the National Labor Relations Board saying that our duty of fair representation requires that we have this information so we can make judgments in order to properly represent the employees. This is a long, tedious fight; it's going to end up in the courts.

The chemical industry totally, is throwing every roadblock in our way, from securing the type of information that would allow us to make these types of objective judgments. They don't share it -- it doesn't come out. That's what's happening, and I'll name company after company, if there are any representatives of companies here who can tell me differently, I will make a public apology to them over the type of data we are receiving that's not been ordered by the National Labor Relations Board or the courts -- we're just not getting that. And what you describe in Du Pont does not exist -- or, may exist in another way. Having biological testing is of no significance because what's happening -- annual physical testing is a screening out program for most workers, and culling them out.

If industry tells us, we're going to set up testing of workers, an annual physical test, but that management will not use that in any way to take action against the employee, we would consider that a progressive

step forward. But management uses what they gather in the way of testing of worker removal -- don't address the problem address the victim of the problem.

So, having an annual physical examination and preemployment physicals are a method of, first of all, selecting the most healthy workers in the population -- especially when you have a lot of unemployed workers, and then consistent testing is the way you move them out when you detect a problem. That's been our experience.

And the University of Illinois survey on what management does with those health records -- management has been much more candid with them than they have been with us, because they do say they make other personnel judgments based on what they find out from that medical testing program, a significant -- statistically significant number of them have admitted that in that University of Illinois poll.

So, what companies do and what they do with that information is a key question, not the fact that they're doing these things. And I think that is the cornerstone of this problem -- what happens to the facts? Who gets them? Who sees them? Who is privy to them?

Only management is privy. And they use that information the way they see fit. Du Pont may be an exception. Are you sharing epidemiological data with, even the company union representatives at Du Pont? Do they get access to all the epidemiological data?

DR. KARRH: We share the data with the employees who are in the data bank.

MR. MAZZOCCHI: You're different.

DR. KARRH I might point out that OCAW doesn't represent any of our plants.

MR. MAZZOCCHI: I agree. Nobody represents any of your plants. Except a few.

DR. CARNOW: Okay next question.

MR. MOORE: Okay, I'm Miles Moore from Rubber and Plastics News in Akron, and a statement that Mr. Mazzocchi made rather confused me: the statement that if workers' health is to improve, productivity must go down.

And this brings up about a three part question, particularly since both Dr., I believe Dr. Carnow and Dr. Froines both said, that the controls, the necessary controls to improve worker health would actually prove more cost-effective than not -- than the non-controls.

So, my question is, first to Dr. Karrh, in your experience, is Mr. Mazzocchi's statement true that productivity must go down for workers' health to be improved, for controls to be affected. Second, to Dr. Carnow and Dr. Froines, that if productivity must go down, how then are controls more cost-effective, and third, to Mr. Mazzocchi, in an environment where workers are healthy, where they are working in a clean environment, where they're showing up for work every day, where their morale must, by necessity, be higher -- wouldn't their productivity be higher, necessarily, than in a smokey, dirty environment where they're pushed to the limit and their health is ruined -- no matter how hard management pushes them?

DR: CARNOW: I think Dr. Karrh then Dr. Froines -- I'll take a small crack at it, an then Mr. Mazzocchi.

DR KARRH: I learned a long time ago never to try to qualify one of Mr. Mazzocchi statements. But our experience is that productivity does

not have to go down to protect a worker's health -- if this can be done on the job by implementing the control measures that are necessary for control of the hazardous materials, engineering controls, if you can, administrative work practice controls when engineering controls are not feasible, or can't be utilized -- or personal protective equipment if you have to.

DR. FROINES: My point would be that, I think Tony should amplify that statement so it's clear to everybody.

I was speaking from an engineering point of view, which states that one can control exposures through engineering means to limit those exposures. That's a fact -- that conditions exist by which controls can be designed and implemented to reduce exposures.

Whether or not, over a period of time when productivity is being maximized, those controls will break down and become less effective, and you will have increasing exposures -- I wasn't addressing that precise issue, and I think that's what Tony is addressing. I'm simply addressing the first step of the process which says that one can implement engineering controls which will reduce exposure.

The other kinds of work-related demands that are made ultimately could make those controls ineffective, but that seems to me to be the issue.

DR. CARNOW: Let me get -- I actually have controls here. The first thing I'd like to say is that I think all generalizations are very bad, and the second thing I'd like to say is that my purpose, or the direction of my comments related to the fact that health care is the biggest cost that we have in society -- it is costing us $150 billion to take care of the American people, and we're not doing the best job in the world at that.

And what I am saying is that if disease in the workplace represents a significant part of that, and I am certain it does I don't know how much -- we don't have any data banks and we don't have registries of occupational morbidity and so on. the only one is in California, and that's only been reinstituted in the last few years. But it is enormous. We know it's enormous; it constitutes an incredible cost.

I've not done cost-benefit -- maybe Tony has. But what I was talking about was the cost of disease and from a physician standpoint.

MR. MAZZOCCHI: All right, let me start. It was a fundamental question, and my suggestion is the present configuration of industrial society does create the contradiction I spoke to -- the ultimate question is what do you do about it? Now let me attempt to prove what I said -- 15 minutes, you only allow generalizations!

Number one -- of course it costs $150 billion. I make no -- I have no quarrel with the figures, I said the argument is over, not that it costs, it's who pays? Industry has prorated that across the population. That's a subsidy workers give to industry -- bad health -- that's a subsidy.

I'm saying industry needs that.

Now let's talk about productivity. There's a mythology that seems to permeate those who don't work. They think that more productivity comes from one's speeding up a pace. That sometimes is the case.

But in a continuous flow industry, for instance, barrel output -- an industry that deals with most of the carcinogens, for instance and birth defects, since that is what this conference is about -- we don't work any harder to produce more; technology and working with far less people ups the

productivity in this way. One is we don't maintain the facility -- where many of you work is in a facility, keep it running. You can build a brand new plant, take all the existing technology and build a brand new facility, chemical or oil facility. Great. Theoretically it works, it doesn't leak.

You're working with volatiles and caustics. If you don't keep that in a state of constant repair, it's going to emit these substances that cause defects and cancer. The industry doesn't maintain the facilities; they let them run. In fact, we have a slogan in our industry -- "Run till destruction." We don't maintain them like we used to maintain them; you keep them on stream as long as you can -- you do with far fewer people. We have far fewer maintenance people and far fewer operating personnel.

Now in order to make that place healthy, you're going to have to bring that facility down. You can't produce something, and it may take six weeks, eight weeks or four weeks -- whatever, it diminishes the rate of production, in order to keep it in good shape.

And then if you implement the engineering controls with alarms, every time the alarm goes off, you're gonna have to stop doing what you're doing and address the release -- you know how that's handled in industry today -- somebody turns the alarm off. That's how the problem is corrected; that's the common way the problem is corrected.

Now let me cite the definitive source in one instance, that verifys what workers have always talked about. Coke oven hearings. There was an Economic Impact Statement -- right? You look at that statement, essentially, it's this thick and there's one key page. It said in order to make the coke oven safe and carcinogen free, you need 5,000 more workers

to maintain it and operate it out of a population of approximately 15,000 people.

Well, I tell you, you add 5,000, 15,000, 20,000 and productivity drops. The nature of productivity has to be understood. Management understands it and the workers understand it -- everybody else doesn't understand it. And what I'm saying is, management is absolutely right, when sometimes they pose it in terms of we can't afford it -- not the type of capital improvement that's needed, that can be afforded. It's to continue the facility producing at a maximum rate -- that's where the contradiction comes in. That's the question that has to be addressed.

I think it's religion when someone says if you make the workplace healthier, people are gonna be happier. That's nonsense. It's the nature of work. Of course you're unhappy if you're choking to death.

Many of the workplaces that we work in are not visibly -- you could walk through the plant and you'll say this is a very clean facility. I could take you through an oil refinery and where in some places, you may not smell anything -- well, you'll smell something, but not to the extent that you think you will. You won't see anything, and yet, there may be substances in the air in that refinery that are lethal over the long run.

So I think there's too much of a simplistic approach to the question of productivity. I think ultimately -- well, I don't think, I know -- ultimately, society is going to have to make the type of societal decisions down the road, maybe after my time, of changing the present configuration of industrial society. And I don't care whether that's in the private enterprise capitalist world or the state capitalist world, it's the same

configuration, the same changes, the same problems.

DR. CARNOW: Okay. We have only about 5 or 10 more minutes and we'd like to get some questions. So I'd like the questions to be brief and the answers to be brief, also.

MS. SHINOFF: This'll be brief. My name is Mary Shinoff, and I'm from the Public Media Center in San Francisco. My question is directed to Dr. Karrh. The program that you've described that Du Pont has sounds excellent, it sounds like it's far in excess of anything that OSHA already requires.

I've also heard similar discussions and descriptions from other manufacturing representatives that I've talked to, particularly around the right to know issue. And given all of that, I wonder if you think regulation of industry in relationship to occupational health and safety is necessary -- and if you do think so, why?

DR. KARRH: That's a very good question. I think that regulations are necessary in many cases, and we have been doing many things that OSHA is now beginning to regulate on.

One of the difficulties we've had with OSHA and the thing we've disagreed with them on, though, is their steadfast dependence on specification standards, where they specify how you will comply and how you will control a material and don't allow equally effective measures that you already have in place.

For instance, some of our programs under some OSHA regulations would have to be dismantled and put back together in a way that OSHA dictates when we've proven over the years that our programs are effective in protecting employees.

MR. CAREY: Bill Carey of Local 1010 with steelworkers. We repreent 18,000 members at Inland Steel. Our company has a newspaper and in it they ran a thing on occupational contribution, especially coke oven emissions. And there they quoted a Dr. Waylen from Harvard I believe, saying that it was between one and zero percent occupational contribution to cancer, and that was probably overstated, because those were cancers that were induced years ago when emissions were lower.

It's interesting that the last OSHA investigation found coke oven workers at the plant had been expose to like 1,000 times the maximum dosage for coke oven emissions.

But my question is -- industry always seems to come out with their figures of their spokesmen, and I wondered if someone on the panel could give me some information on why the discrepancy between industry's statements of one and zero perrecent of cancers are occupationally induced and another figure of 35 to 40% is from the occupation.

DR. CARNOW: You were on that task force, Dave.

DR. RALL: I'd like to make a number of comments. Our distinguished President of the Academy of Sciences, Phil Handler, used that, but if you'll notice, he failed to reference.

MS. Unidentified: We can't hear!

MR. Unidentified: Why don't you use this mike.

DR. RALL: Dr. Handler, in a speech before Northwestern University, said essentially no cancer was caused by chemicals. I should point out that he failed to document that statement. It was not referenced, it was just a statement.

I noticed that my colleague is now talking about three to five percent, and quoting the director of the -- I.R. Higginson, I want to point out that Dr. Higginson, in previously published papers, there of four years ago, used the figure three to five percent, but what he was talking about was three to five percent of that fraction of human cancer which we think we know the cause of -- and that is about fifty percent.

So he was saying that of the 50% of human cancer that we think we know the cause of, three to five percent is occupational -- and that's very different from 1%.

Now in terms of the HEW estimate paper, I do want to point out the title was "estimates." We tried to make the most realistic estimates of what sort of fraction of cancer might be due to occupation. We did one thing that we explicitly said we did, that nobody else does. We allowed for double penalty. We are unaware of how you can calculate what is the cause of a lung cancer in a cigarette smoking asbestos worker. We cannot say it's all due to asbestos or all due to cigarette ~~smoking.~~ We say you have to end up with a number greater than 100% -- because if you cut down the asbestos exposure, you'll cut down disease; if you cut out cigarette smoking, you'll cut out disease.

We were trying to look at ways you can practice preventive medicine, and in that sense, you've got to double count. So we obviously would come over 100%.

Now in all honesty, we spelled this out in the paper, and I think when you quote us without indicating that you are, in fact, misquoting us.

So -- this debate and argument will go on for a long time. I don't

think 20% is a bad figure, and I'll stick with it.

DR. CARNOW: I like the nice quiet way you did that! I'd like to make only one comment. I think that when you're dealing with a disease like cancer, you have every right in the world to err on the side of concern, and particularly, where there is such a large area of lack of knowledge. I think that otherwise, you're reduced to the probability or possibility of body counting, which is a very bad way to look at health questions.

MR. PRINCE: My name is Anthony Prince, and I'm with Steelworkers local 65 in South Chicago, and my question is directed at Dr. Karrh, that you stated that you feel that the lack of attention paid to this problem by industry in the past has been more a question of not having the knowledge than a question of irresponsibility.

In February of this year, we had an accident at the Burnside Steel Foundry (phoenetic) in which molten metal came into contact with standing water, blew the roof off the foundry and killed four steelworkers and injured 28, including the local President, who was killed. And we researched this -- our safety committee researched it and found a document printed in 1957 by the American Foundry Society on their standards for safety in the foundry, which had three pages of material on standing water and the steps that should be taken to eliminate it from the areas near molten metal.

How can you make a statement that this is 20 -- 22 years ago that this knowledge was known by the foundry industry, and in one of their own trade journals, and yet you say that their lack of attention is due to lack of knowledge and not irresponsibility. How can you justify that statement?

DR. KARRH: Well, the example that you used -- there is no way that I can justify anything because I'm not familiar with it, nor am I familiar with the steel industry.

I think, though, that the implication that I was trying to get across is that most of the time that anytime an occupational health hazard has developed in industry, it has been because we lacked the knowledge of how to deal with the materials that we were dealing with, or what the hazards of these materials were -- rather than anyone purposely going out and intentionally hurting someone.

When someone gets hurt on the job in Du Pont, and I think, in most other companies, it's a real tragedy -- it's not something that we leave home every morning. As I think Tony said earlier, we don't leave home every morning saying, "Well, today I'll get to kill a couple" -- we leave home every morning hoping that everything we do works out well so that we'll have a safe operation and no one will get hurt or injured.

DR. CARNOW: Since we don't want to add malnutrition to the problem, we have one more question, and then lunch.

MR. VAUGHN: My name if Robert Vaughn, and I'm here to represent the American Postal Workers Union and we represent some 600,000 postal workers.

Now we heard earlier in the program that the postal workers are denied the protection of OSHA by the goodness and grace of the postal leadership, that they refuse to accept it. However, we do have some very real problems revolving around the use of the handling of lead.

You gentlemen who spoke so well on the problems of lead -- we do have lead problems because of the postal service's misguided desire to use lead,

rather than some other material for marking seals on such things as international pouches and enclosed dispatchers, and so forth. Workers are being told that it is harmless to handle the lead products. They are given absolutely no precautions to take, to the best of my knowledge.

Approximately five years ago, I attempted to get a reading on the handling of lead products. Now, can lead migrate into the capillary system through the skin? It cannot?

MR. Unidentified: You could ingest it, but not --

MR. VAUGHN: It's only through ingestion?

MR. Unidentified: Well, you can breathe it if it's volatilized.

DR. FROINES: Breathe it primarily, or through ingestion, also, but not through the skin.

MR. VAUGHN: Not through the skin?

MR. Unidentified: If you wash your hands carefully before lunch, you can generally avoid a lot of ocntamination in that kind of thing.

MR. VAUGHN: Thank you.

MR. MAZZOCCHI: I would make one point. Not only postal workers don't receive due process and protection -- we represent nuclear workers, and if you're represented by the regulatory commission of NCR and DOE, and we're abolutely without the type of benefit that you're discussing, also. We don't have the benefit of OSHA, and it's a hat-in-hand situation.

So we sympathize with your plight because we're confronted with the same situation.

MR. PEARCY: Thank You, Doctor Karrh, Mr. Mazzocchi, Dr. Rall, Dr. Froines, Dr Carnow. Thank you all.

# WORKER HEALTH -- PERSONAL TESTIMONY

Studs Terkel, Author
WORKING

Franklin Wallick, Editor
WASHINGTON REPORT
United Auto Workers
Author of THE ENDANGERED WORKER

Workers from Cotton, Steel, Chemical,
and Lead Industries

MR. LONDON: Every automobile these people are driving out here today--that was what I was making batteries for--automobiles. And after I was stricken, I got to the place I could not eat, neither sleep...and I had to take both hands to hold a cup of coffee to drink and I lost weight, and I almost lost my family, because I was unable to produce a livelihood for my family because the company did not reimburse me the two years I was off. After I met CACOSH and they advised me to go to the doctor, to a private doctor -- and I let the doctor examine me, and I had a lead level of 102, and they took me to Cook County Hospital, where I spent five weeks.

After that, I returned to my job. The company still did not reimburse me for anything. They would not pay me for the time lost. But my family had to live. They were suffering. And I had a wife and two kids. My wife had to go out and get a job to subsidize the livelihood of my family. And after that, I retired from the c[illegible], and I was fighting the company for two years to get reimbursement. I got a meeting with the President of the Labor Department to find out how I could pay off my indebtedness.

In my period with this company we were oxidizing lead into powdered form. What I mean by oxidizing lead, we had to heat the lead to 600 degrees Fahrenheit. And we would put oxygen in on this lead, and it would oxidize into a powdered form. And this powdered form--we're breathing this powder--you could taste it. Lead is sweet, believe me or not. I am a survivor of lead poisoning, to tell the story. I can tell you, it is hell. If I had my life to live over again, I would not work in a plant of lead

poisoning, because I know--you and I--what the workers in those plants are going through.

Each year, we are losing over 100,000 people in this country, which is one of the greatest countries in America, which is America -- from occupational disease, and the company is not doing anything for the workers. The company only thinks of things that will increase their power and gains. Hire a man and he dies--hire another.

They do not care about the workers. Their supervisors are sitting up there in the office -- the workers are out there going through the price of hell, and their families are suffering from it, and the companies do not do anything for the working class of people. And they pay them a measely salary, and they get their big bonus when you produce.

I used to work a lot of overtime. I regret today that I worked one minute overtime, because that was my life I was giving for overtime. I have suffered, and still suffer today. I am alive to tell the story. Occupational disease is hell. You will know when you catch an occupational disease. It is hell, let me tell you. I am living to tell the story.

I have a friend of mine -- he and I was taken off the job the same day, two years ago -- he is still in the hospital today. He called me the other night, and my wife told me my friend called me and that he didn't sound good. And I called the hospital. He called me because he knows that I am a victim of occupational disease, and I am alive to tell the story, that I can help, not him, help my fellow workers. The only thing I regret today is that I only have one life to live. If I had another life to live,

I know who to fight for -- my working class of people.

(APPLAUSE)

MR. TERKEL: Why do I think of TV commercials? I mean, why do I think of all the commercials every night in which batteries are advertised? It's a rainy night, the car is stuck, and you find that the battery is gone. The wife says: Why don't you get such and such a battery. NBC, ABC, and CBS do a hell of a job in selling those batteries. Isn't it strange no NBC, ABC or CBS cameras are here this afternoon? Could you imagine if Frank Sinatra had a press conference? You couldn't get in if Farrah Fawcett Majors were here right now, for all the cameras, you wouldn't make it. If the Shah of Iran were here, you'd never get in. But they don't want to hear Ed London do they? Yet he oxidized those batteries. Is there any wonder that kids know nothing about the workplace and labor? It's not their fault is it. Now what do they get? They read Charles Dickens in the better schools, you know that. And Dickens wrote a great novel about how rotten things were in the Industrial Revolution. And Charles Dickens is alive and living in the United States right now -- even in the workplace, and some are alive, but not very well.

And so from Georgia, just coming in about an hour ago is Lloyd Goss, and Lloyd Goss is a card man. And what do we know about card men? The only card men we know about on television is a Las Vegas dealer, right? He deals out the fifth ace to the guy who gets shot in the cheek in a western by John Wayne. Or Steve McQueen in "Cincinnati Kid."

Well, Lloyd Goss happens to be a card man who works in a cotton plant. has to work. He's got a pin right there, he got that from the company. Twenty-five years, then he got another gift from them, too. It's called brown lung. I want you to meet Lloyd Goss. He'll tell you about it.

MR. GOSS: Thank you, ladies and gentlemen. I'm happy to have this privilege of coming to meet with you people today, and it sort of shocked me when they called me and told me. I had to hesitate a few minutes before I said yes.

My name is Lloyd Goss; I have been working them cotton textile mills since 1953, and for the past 25 years, I've been in service to this company, this year -- and this month coming up I'll be there 26 years.

And all during these 26 years back behind my life, I had overtime and all of this, and I was one of the organizers that helped bring the union in. Then after we got the union organized, got the first contract, we got to working on the dust problem, which is a hazard to your health.

And so that's how we got it started. Now I want to go back just a few minutes, about a second or two, when Dick Mathis (phonetic) was the union representative of (INAUDIBLE) at that time. We got a committee and went to talk to Dick Mathis, and told Mr. Mathis that we wanted something done in the cotton mills on account of this dust, because it was bad on your lungs and your health.

So in return, they wrote to the Labor Department before OSHA was ever -- come in on this. So then when they got all of this started, the dust

got bad, and (INAUDIBLE). Then the dust come running out of the openers, and we had to inhale that. So a few years after that, the Labor Department sent someone in there to investigate the dust problems, and they found out it was hazardous.

So I went to a union meeting one day, and Walt Braney (phonetic) was there, and Walt said that they were gonna get this dust out of there. I said hey, I hear you Walt. And that made me feel good. So after we got all that started with this dust, and we've come a long ways with it, and by the help of OSHA, we got some cleaning systems in there now in some parts of it which is better now than it was before. And also, we have dust problems from the cards, drawing and the setters, and so all you can see in there is dust, and when the wind blows through the fan, it just gets a big accumulation of this fine mist of dust, and you inhale that. And I cannot wear no dust mask in there. If I did it would smother me to death. Now when I go in there, open the door, here comes the dust. And I start smothering.

After about 30 or 40 minutes, I get to where my breathing is better. But I hope, pray, and trust to good God in heaven that the time will come when the cotton textile mills will have to get that dust out of there to prolong lives of workers. (INAUDIBLE)

That cotton dust just comes off of the cotton and covers your lungs up. And then we have had two die in the card room, out there where I work. One in the dust house, the other in the setters. And no doubt they had a heart attack because they got to where the stuff smothered them to death

there on the job. And I hope I see the day come, when the Canton cotton mills will have to consider these things for my fellow workers and that they will have a better way of living, a better way of breathing where they won't have to wear these dust masks. And I want to see the time come when they will have to go along, and get that (dust) out of there. Thank you very much.

(Applause)

MR. WALLICK: I'd like to thank Pat McGuire of CACOSH which is the local occupational health and safety organization here in Chicago, Tom Curtis, a freelance writer, and the Amalgamated Textile and Clothing Workers Union for providing people who were on this panel. Did you have a question?

MS. RANDALL: (INAUDIBLE)

MR. WALLICK: No, it's a public interest group.

MS. RANDALL: (INAUDIBLE)

MR. WALLICK: Give the name of the company you work for again.

MR. GOSS: Oh, that was my mistake. It was Canton Textile Mills, Canton, Georgia.

MR. WALLICK: How do you spell that?

MR. GOSS: C-a-n-t-o-n. Canton, Georgia.

MR. WALLICK: What about the company you work for?

MR. GOSS: Canton Textile Mills.

MR. LONDON: The company I worked for was known as the National Lead Company, but they changed the name after so many people got lead poisoning, to NL Industries. But it was the National Lead Company.

MR. WALLICK: Now three of the people on this panel are people who have been represented by unions. The next person, from Texas, works at a factory which he will explain does not have a union, and I think that his situation presents an interesting perspective.

I have visited several northern countries where health and safety is a very important part of the trade union religion in those countries, and I must say that one of the things that always impresses me when I go to those countries is the caliber of the business meetings. The business community in Norway, Sweden, Finland and Denmark. And I think it has something to do wtih the fact that 90% of the workers in those countries belong to trade unions.

I would like now to present as our next panelist Donald Jackson who will explain in his words his work situation.

MR. JACKSON: Can you all hear me? My name is Don Jackson from Houston, Texas, and there's one thing that I do want to clarify. I no longer work for this company. The name of the company that I worked for as of November 1973, was Velsicol Chemical Corporation. V-e-l-s-i-c-o-l. Velsicol. I started working for them about November 9, 1973. I worked until about March 4th of 1974, and when I could not walk any more. There were several symptoms. As of November, when I went to work for them, I weighed about 205 pounds. I had my birthday, which is December 16th, and

I weighed about 160 pounds. That was the first symptom.

Also, I suffered profuse sweating and so forth and so on and weight loss, constipation, problems with urination, I had bad tremors -- I'm right handed and I could no longer eat with my right hand -- I had to eat with my left hand.

All this time, I had no idea what I was working with, nothing -- I had no idea at all. About January or February, somewhere around there, I tried to run across the parking lot which is at work, and I found that I could no longer coordinate my leg muscles. And from here, I rapidly deteriorated until March 4th when they sent me home and told me to come back when I was better. And I thanked them and left.

So they didn't fire me right at that particular time, so I went to the company physician, and he diagnosed my condition as an inner ear infection. So he prescribed medication and so forth, and about two or three days later, I wasn't any better, in fact, I was much worse. So I went to my own physician, and he also told me that I had an inner ear infection, and he gave me treatments and so forth, I went home.

A week later, I could not walk. So a country doctor in turn, committed me to Pasadena Bay Shore Hospital under the direction of a neurologist. They sent me through several different tests, myelograms, brain scans and so forth, looking for tumorous lesions and things like this.

They could come up with nothing. All this time, I was trying to tell these people, the doctors and so forth, that there is a possibility that I

was working with something at the plant that was doing this to me. Nobody took down or heeded that fact, so nothing was said or done about it.

Eventually, I stayed at Pasadena Bay Shore for two weeks going through these tests, and before my release, the doctor came to me and told me that I was suffering from a demyelinization of the nerves. Well, what is demyelinization of the nerves? I was 19 years old. I had no idea.

So anyway, to spell it out specifically, I left the hospital, I went to the country doctor and he spelled it out for me. He told me I had multiple sclerosis. And that upset me quite a bit; I wasn't about to accept it. There were other things that were coming to light as far as things that I worked with out at the plant, such as the phosvel which is a pesticide that breaks down the nerve endings and so forth, 7-hexane which is very toxic, toluene and so forth.

So I went to OSHA, and at that present time, OSHA was not -- I no longer worked for the company -- at that time, OSHA was not allowed to make investigations unless you worked at the company, so therefore, it was a dead end.

I kept on going to different organizations -- EPA and so forth, and nothing. All this time I was walking with a cane. My second hospitalization was at St. Luke's Hospital in Houston, Texas, where I picked my own neurologist and so forth. He also confirmed the diagnosis of MS.

I went through another battery of tests, some the same and some different, and I was given intrafascicular injections, and if you don't

know the word, intrafascicular injections is what they do is they stick a needle about six inches long into the lumbar section of your spine, and they do this about once every other day for two weeks. It's no fun. But this was for MS. This was for the diagnosis of MS. Whether it helped in my condition or not, I have no idea. I don't believe the doctors would, either.

So I finally found a lawyer through the help of my parents, who stood by me all the time, and I was living with my parents at this time because I couldn't support myself. I went to a free lawyer's clinic, and they referred me to someone, and I in turn found a lawyer. He listened to my story, and it sounded unbelievable, but he accepted it.

And nothing came to light, actually, until Velsicol tried to get the permit for registry in the United States for their leptophos or phosvel, and then a national organization started checking into the background, health history and so forth -- and found out that not only was I affected, but there were several others that were affected. People ranging in diagnosis from MS to several demyelinating brain diseases, encephalomyelitis, and so forth. There was just a whole array of them.

So they checked into it, and they found out that perhaps something was going amiss, so they suspended all production, shut down the plant and so forth, and to this day, Velsicol's now operating, but I don't believe that they are making the leptophos, although when I left, they started making an even more dangerous chemical which happen to be EPN, I'm not sure -- I don't know exactly what that is, but it's supposedly more dangerous.

But in essence, what I want to warn all the people about is that in my instance, it was -- there was, it was a very small company, and to get the national attention that it did through people like Mr. Curtis and so forth, "Sixty Minutes" and on and on, it was a very small plant, and I am one of millions over the past fews years -- few years, my foot--over several decades, that have been affected by this -- and not just by this, by lead poisoning, whatever.

And I think it's time for the public through the media, because the media is very powerful in this company. This, United States of America -- I think it's really high time that they sat up and took notice of the people who are making this company go, and that's the workers.

The corporations are made of nothing but workers, and that's all I got to say. Thank you very much.

MR. TERKEL: What a powerful slip of the tongue, just then, between Ed London, Lloyd Goss and Donald Jackson. This company, the United States of America. You know Velsicol executives are very often in the news, featured in very handsome profile on the financial page in Newsweek, Time, World News and Report. But very rarely Lloyd Goss, or Donald Jackson or Ed London. And Lloyd just told me one other thing that he forgot to add. Lloyd.

MR. GOSS: We were talking in the plant yesterday about some medical things that should be done in the plant. So I told them yesterday that I would bring this out if I happened to think of it. People who are working down at Canton Textile Mill or any other cotton textile mill in the south

or in the United States. If an employee was working in there for five years, every two or three years, I think they ought to have a physical examination with lung X-rays once every year, and I think those who have been there for 25 or 30 years back, and I think they ought to have that done every six months in order that they can catch this deadly disease before it gets out of control.

So I don't know what you all think of that, but I just thought I'd bring this to your attention while I thought about it -- and all this should be at company expense, because they got us in there, and they got us living in this dust, and so they're going to have to do something about it. Thank you.

(Applause)

MR. TERKEL: At the beginning, Frank was saying that this is a success story, it's a success story after a fashion. Richard right now works for the UAW, and Rich is the full time health and safety representative for the UAW Local 719, but he's paid his dues, to put it mildly. He's been a journeyman tool machinist ... and so he knows what's going on. His thoughts about what has been done, can be done, and must be done to diminish the horror in some of these workplaces.

MR. MATTHILLION: As Studs says, I'm not a victim, fortunately but I am aware of occupational safety and health, and I think one of the -- just an interesting thing here, Ed London is a victim of NL Industries, and quite ironically my father worked for 31 years for NL Industries and he, too, was poisoned by lead on numerous occasions to the point of his death. He was

subject to many occupational injuries, slipping off a defective ladder, I remember one time 6 weeks in a cast - he held on by one arm from a beam for about 15 minutes 45 feet in the air until somebody finally got him down.

He did a little better than Ed London. He got something for his 31 years, and I happen to have it here -- it's a Cross pen. And it's got "NL Industries" on here. And I was doing a little simple arithmetic. This thing was on sale for $12 at a local department store up by us, and if you divide that out, it comes to about 38 cents a year compensation for a lot of suffering.

But enough of the horror stories. One of the things UAW does to promote health and safety is to stress education and making people aware of situations in the plant. Electro Motor which is in LaGrange, Illinois -- we have been very successful in establishing a joint local health and safety committee.

Management has chosen to be responsive to the point that we meet regularly, our ideas are taken into consideration. In most cases, we are talked to before decisions are made with regard to health and safety conditions in the plant, most of the time.

Some of the programs -- I'll give you a little history here -- one of the things that we wanted to do was to first of all remove health and safety problems, and things of this nature from the adversary type thing that is common among local unions, international unions, corporations. Health and safety is a non-negotiable issue -- it's either safe or it isn't -- it is either health or it isn't and you can't really bargain health and

safety, per se, across a table. You might be able to bargain some solutions, but you can't bargain whether or not it is indeed safe or unsafe.

Some of the things that we tried to implement was, again, the committee meeting on a regular basis, and this committee consists of people from either management and the local union. We instigated a truck driver training program, and again, the union participated. Management sent a union representative to perform the industrial engineering and the people involved there to implement this thing to one or another GM plants in Lansing, Michigan -- I believe it was the Oldsmobile plant. Because we had decided after reviewing a lot of the training programs for truck drivers -- forklift drivers--that Oldsmobile, did have indeed one of the finest programs around, and we would like to work out to implement this program at (INAUDIBLE).

So they did -- they sent the people that were in the process of implementing the identical program now at MB. As of recognition, is another thing walking-working service, is what we did, we talked to management, and management purchased the ... (end of tape)

GM is due for a strike tomorow at midnight. Hopefully it will be settled by then. But I am very satisfied to say I expect our client has been (inaudible) one of the selected targets. We got lucky, and I think if we go out locally to the particular clients, I'm gratified to say it will not be a health and safety issue. (Inaudible) health and safety (inaudible).

But this thing is not a -- you know, this health and safety thing to me is not meant to be a placebo or a sugar pill or something. We've had our problems. We still have health and safety for plants. We still have OSHA inspections. We just finished an OSHA inspection to the tune of $102,000. So you can see that we do have our problems, but we're moving in the right direction. But again getting back to the education, the training and the making people aware, it's a monumental job. It's something that cannot be done by the labor unions themselves or CACOSH or all the other COSH's around the United States.

OSHA can't do it by themselves. NIOSH can't do it by themselves. This is something we definitely need, definitely need the help of the media. And the only way to promote, I believe the health and safety of the United States today is through the help of the media and for that I ask your support.

Thank you.

(APPLAUSE)

MR. TERKEL: I know that Frank's going to introduce Ed, who has a marvelous postscript to add about company doctors. I've got to scram by way of apologizing, BBC is doing a film about Chicago and they said to me they want a real film about Chicago, so could I work with them. I said okay, so I've got to scram now.

I feel, to put it mildly, deeply moved by this testimony, this testimony in the most religious sense of the word, by Ed, by Donald, by Lloyd, and by Richard. I want to add simply this: the media--that I think has got to be the big one. You see right here how interested the media is. We know that journalists, working journalists, are very interested. You got to get the guys who run it. It's as simple as that. As to what is a story. What is a story of American lives--working people. What is their story. Not about things--that's what the commercials are about--most TV shows. But about human beings. And that's got to be the big effort. There's got to be pressure, pressure and more so. Thank you very much, particularly for having me here. Thank you.

MR. WALLICK: I don't know whether many of you were at this meeting, but several years ago the New York Academy of Sciences had a conference. A week-long conference -- on cancer in the workplace. And the thing that struck me about that, aside from the fact that there were a lot of excellent people, was that every noon and every afternoon they had a press briefing to sort of decipher what was going on because the papers presented were so abstract and so complicated, it was impossible even for working journalists who were -- we had some of the best science writers in the business there.

I think one of the things that comes across at this conference is that we don't have to decipher what -- we're talking in a language that everybody understands. That's, of course, why the media is so important, because they help to demystify some of the jargon that has become part and parcel of science. I'm not putting down scientists. I just think that the job of journalists is to help people communicate, and I think that the Department of Labor has done a superb job in putting this conference together, because the more we understand about the problem, the more we can do about it.

I'd like to go back just a little bit to the -- my favorite subject, the Nordic countries, because one of the things that I always get is a little pep talk over there about why do you Americans have to have so many lawyers? Why can't you just solve it the way we do? They put four wise men in a room, and they come out with a good answer.

Well, I think when you have a big country of 220 million people and you have all of the controversies that we do have, lawyers are terribly important. I just want to make sure that we have enough lawyers on our side, so that we can fight the battles that have to be fought.

I think there are certain advantages that come out of an adversary situation. I know that we had four health and safety reps from the UAW very much like this brother, who were there in Sweden last spring with me and they spotted things that these workers had just let fall by the wayside.

We have to fight for our rights in this country every inch of the way and sometimes that's a very positive thing.. I think what you've heard this morning and this afternoon are people who are talking from the heart about things that affected their lives, and they're not speaking just for themselves. They're speaking for countless other people.

Now, Ed London would like to add a little postscript I hope that he'll manage to stay this side of Hawaii.

(Laughter)

MR. LONDON: Let me say again, I am a survivor of occupational disease to tell the story.. About working for the companies and the company has a doctor for you, and the doctor will examine you, but your medical record will become the property of the company. And the company doctor is not worth a Continental for the working class of people. And we today have a new breed of doctors coming out.. I learnt that when I was in the Cook County Hospital. We had a new breed of young doctors. They are fighting for the human life, not the money.

But these old doctors for the company, they are for the money and--excuse the expression--damn the health of working class of people, so long as they get their big dollar. That's all I have to add.

(APPLAUSE)

MR. WALLICK: I guess we can put that under the category of fair comment. We have time for questions, and as this is a media conference, we would like to have people representing the media ask the questions, if that is possible. We don't have a floor mike, I guess, but we can repeat the question if the voices are too thin. Yes.

MS. (INAUDIBLE): A very short question. (INAUDIBLE) Where is the program for forklift drivers that you said was so good?

MR. MATTILLION: At the Oldsmobile plant in Lansing, Michigan. One of our shop committeemen had worked for some time at Oldsmobile in Lansing, and he heard that we were looking for a program that was suitable, and we had gone through a lot of other sources, and we did not find anything that was suitable until we went to this particular establishment and viewed their program.

MS. (UNIDENTIFIED): What you are talking about is primarily directed toward preventing injuries and accidents, unless I misheard it. Do you have a similar program with regard to chronic exposures or is that something upcoming? Where do you stand on that?

MR. WALLICK: The question is what about the program to prevent occupational diseases and illnesses?

MR. MATTILLION: With regard to the occupational diseases, again this comes into the area of hazard recognition. And not only do we use the Ohio State program for hazard recognition, but we use CACOSH and we use union meetings, and we use time on the floor. You know, this is--primarily the union has been doing it. But management has taken a stand now that they've made a commitment that--indeed occupational disease is a problem. And in our particular shop, our biggest problem is exposure to total particulate, this sort of thing. And with these contract negotiations we have come up with some, what we believe are acceptable solutions to this problem. Welding, which is a big problem with smoke, it's an operation that creates a lot of smoke, and you know, we don't claim to have all the answers yet. But it's a step in the right direction.

MR. WALLICK: What about identification of chemicals that are used in the manufacturing process? Do you have the answer to that?

MR. MATTILLION: We do not have the answer to that yet. In local negotiations we've talked about it. It was a local demand, and as Frank Wallick knows, they tell you that it was preempted when its on the big table in Detroit.

Now, some of those issues will be kicked back down to local level, so that they can discuss it, hopefully. If we don't get something at the big table, they refer it back to the local and hopefully they'll get it, and then they can use it as a precedent, a precedent type of thing for upcoming negotiations three years hence.

But access to information has been a big problem with regards to chemical concentrations, medical records, this type of thing, and it comes back to the confidentiality and trade secrets, it kind of hangs in that area.

MR. WALLICK: One of the things you didn't mention Dick is how many people work in your particular factory?

MR. MATTILLION: For that particular plant I believe right now runs about 10,500 hourly people and probably another 45,000 salaried people.

MR. WALLICK: Do you have any idea how many chemicals, compounds or combinations are actually in use in that particular plant?

MR. MATTILLION: I can't answer that with a numerical figure; however, it's got to be between 10 to 15,000. And I would say that that's a very conservative estimate.

I might add just one other thing. A big problem we do have is with diisocyanates and poly paints, TDI, this type of thing. It's not a problem per se but it's an area of concern to the union, and we have not yet been able to get any kind of substantial data on that. And that may be because there's not really that much in that area as far as research goes.

MR. WALLICK: Question back there?

MR. (UNIDENTIFIED): Yes, I would ask each of the worker panelists now to tell us if in plants that they have worked in, number one, were the workers able at all times to find out the names and the chemical properties and what the things would do to you, of the substances that are in the plant? And number two, in their plant were the workers and the union, if there was a union, able to find out what the medical records were of the workers with respect to any illness which was caused by, or contributed to, the experience in the workplace? For each of you would you state that, please?

MR. WALLICK: That's a pretty broad, open-ended question, but we'll give it a try.

MR. LONDON: You want to know the different chemicals. We have many chemicals in our plant. (inaudible), lead, for example. They did not tell you what effects lead has on you. (Inaudible). There are other chemicals that we work with too in the plant, which have the company code name. Do you mean which is (inaudible) at the time demand and under the name that the --the effects would have on the records. The company would (inaudible) the other company would get their secret, because we

(inaudible) those names of the chemicals that would -- would have effects on other people, the name of them.

And we work -- only thing we really did know was castor oil put in the paint. We know that. But the other chemicals, they didn't tell us anything about it. They didn't tell us anything about lead. Lead is detrimental. May I tell you, because I have been through it. I am a survivor to tell the story.

MR. JACKSON: It's actually quite simple. (INAUDIBLE) I'll go a little bit further. The plant that I worked at had no safety regulations at all. Zero. None. There was no posting of chemicals. Nothing. They just didn't have a safety program. Zero.

MR. WALLICK: Do you want to answer that question?

MR. GOSS: The chemicals that we use in the carding room is known as pro-chem chemicals. And back at that time we had big barrels. You set the bucket under the barrel, and it runs out just like soapsuds. Well, the boss, he comes along through there, says you have to cut it full strength, you can't mix no water with it. And that comes so bad in there, you about near die in there, and well--and this cotton dust too--there's no way you can get away from that. (INAUDIBLE) And they had barrels behind each one of those pick hoppers at the time I was running hoppers. They had eight machines. And on the back, why you can see the oil coming out of the oil pipes down in the cotton where it turns. And there comes the cotton dust. So then they--so I think they eliminated that. They've got the pickers out. They've got the cleaning system in where the pickers are, and now the

only thing that we've got now is oil, around the scrubbers and around the carders. And it's not so bad now as it was at that time. Well, this cotton dust business is a factor--and I can't get away from it. I'm going to go back about a year or two. I don't care if they fire me next week. I'm going to tell them what I think before I go back up there. About a year or two before OSHA, they went up there to make plans to put in the cleaning system. Well, at that time they had it all blowing down. You couldn't see your hand in front of you. You couldn't see up there in the card, you couldn't see nowhere.

Now it was this sort of thing. It was one day, it was the superintendent. He had on a white shirt, he comes up through there, he had a bald head--wasn't a hair on this head nowhere. I don't know what (INAUDIBLE). He comes up the steps and you couldn't see him--the dust covered him up, and you couldn't tell what his head looked like. Well, he didn't stay around. Well, and then about that time here comes (INAUDIBLE). He comes in there. He says, keep the doors closed to keep down the dust--and I mean they had them closed. And we had to inhale that dust. And when OSHA comes through there they had to clean up that mess. I thank every one that came in there, and I appreciate that very much. Not only for myself, but other workers coming in behind me, that they may enjoy working there in a clean, safe, healthy place. I only got two more years in there. And I'm coming out, and I hope that, when I leave there, there'll be somebody up there in my shoes to carry on where I left off.

(APPLAUSE)

MR. MATTILLION: Now, obviously chemicals and toxic substances are a big problem in the workplace today, but when we talk about the rights a lot of people kind of lose sight that there's other things that we need to know about too. Some of those things are the kinds of physical agents like noise. You know, everybody knows there's damage done to your hearing at 90 decibels. That's -- I think that there is a crazy situation but, you know, that was the best that we could do at the time. And by us I mean OSHA.

Heat stress -- we have no workable standard for heat stress. Heat stress, there's a good criteria document I believe from NIOSH, this type of thing, but nothing definite. That's a big problem, especially in your manufacturing plants and industry and in your foundries, this type of thing.

Ergonomics is another one that's just come to light. These people that do repetitious jobs on the lines. A good example is a guy that bends over all day putting the spare tire in the trunk, you know, in the line while it's moving, the lady that has the screwdriver going like this all day, and she develops carpal tunnel syndrome of the wrist or something of this nature. That's something that we need standards on. I believe that the right to know should be carried a little further to include the physical agents. When we talk about hazards in the workplace, we talk about chemical things and the toxic things. I think physical agents deserve some recognition too.

MR. WALLICK: Thank you very much. I'm sorry we're not going to have

more time for questions. It's five of 2:00 and we going to try to stay on time, but these people will be around, and they're certainly open to anybody that wants to talk to them. I appreciate very much your attention, and this meeting stands adjourned.

# ASBESTOS: CASE STUDY

Dr. Irving Selikoff
Professor of Community Medicine and
Professor of Medicine
Mount Sinai School of Medicine
City University of New York

Barry Castleman, Environmental Engineer
and Public Interest Consultant

Dr. Paul Kotin, Senior Vice President
Johns-Manville Corporation

MR. PEARCY: This is the panel discussion on asbestos as a case study. My name is Glen Pearcy. I'm with the OSHA office of public information. Our panelists are, to my immediate left, Dr. Paul Koten, who is senior vice-president of the Johns-Manville Corporation for Health, Safety and Environment. He's been in that position since 1974 and is a former Dean of the School of Medicine at Temple University.

To his left is Barry Castleman, who's an environmental engineer and public interest consultant, who has published a number of books and articles on asbestos and studies about the substance.

To his left is Dr. Irving Selikoff, who is professor of community medicine at the Mt. Sinai School of Medicine and who was the founding president of the Society for Occupational and Environmental Health and is widely recognized as one of the international experts on the question of asbestos. Dr. Selikoff will start off the discussion by providing us with some of the historical background of asbestos as a case study hazard. Dr. Selikoff.

DR. SELIKOFF: I don't know if we've ever had a congressional law which stated that the intended policy of the United States in terms of occupational or environmental hazards is to control them rather than to ban them. But really that's been a societal decision that we've all made. We don't generally ban things. We've had a common agreement that we control them.

That's an extraordinarily important decision, because it carries with it a very complex set of requirements, often not appreciated. It means that in order to control something, you have to have information on what kind of control, what levels do we allow or not allow. That puts on the scientists the requirement to get some quantitative information, not a yes or no answer only that this can or cannot cause disease.

It means that we to have mechanism to set regulations, to maintain monitoring and surveillance. It means that industry must be able to respond and so must labor. A very complicated social decision is made once we say we're going to control something. The alternative is to ban. And if we opt for control rather than banning, we also accept that which goes with control; standards, regulations, surveillance. But that is the choice -- banning or control.

I will review with you what happened with one such decision. If there were a title perhaps we might call it "anatomy of a failure."

This is the 80th anniversary of the first autopsy on a man with asbestosis; In 1899 H. Montague Murray, a physician in London, had a patient who died gasping for breath. An autopsy showed extensive scarring. This took place in 1899 -- at a time when the asbestos industry was just beginning.

This case was shown to a departmental committee of the British

Parliament, and at that hearing Dr. Murray said: "One hears -- generally speaking -- that considerable trouble is now taken to prevent the inhalation of the dust, and so the disease is not so likely to occur as heretofore."

And as a result of that optimism, that British Parliamentary committee in 1907 decided not to consider compensation for people who get diseased with asbestos exposure.

As a result of that optimism in those decades from 1890 to 1899 and from 1900 to 1909 the use of asbestos in the United States grew from 64,000 tons to 265,000 tons, a good product, good quality in the materials. And we began to have many workers employed.

In 1911, in Britain, inspectors of factories were often ladies, and they were called the lady inspectors of factories, and Miss Sinclair was one of them. And she went into some of the new asbestos factories there and saw much dust. She said, "Very defective provision for exhausting the dusty processes of asbestos manufacture. Long before any possible further growth of the trade, I hope that exhaust ventilation will be effectively applied." And that was in the annual report of the chief inspector of factories in Great Britain for 1911.

She said, "Let's not worry too much. Now that we know, there's not going to be much more of a problem."

And as a result, in the next decade, from 1910 to 1919 instead of 265,000 tons used in the United States, we used 986,000 tons, because now that we knew, the controls would be used.

It was not until 1918 that the first hints of disease began to appear in the United States.

Frederick Hoffman, vice president of the Prudential Life Insurance Company, published a magnificent text, Respiratory Diseases in the Dusty Trades.

Dr. Hoffman noted that the insurance companies wouldn't give the insurance to asbestos workers. And it was in the same year that one of our greatest radiologists in this country, Dr. Pancoast of Philadelphia, did the first X-ray study on people who were exposed to dust, and he said, "You know, I've looked at workers who've been working with asbestos, and their X-rays are abnormal."

So in 1918 we had the first scientific information in this country that damage could occur. But optimism continued, and as a result in the the next decade from 1920 to 1929, instead of 986,000 tons of asbestos used, 1,999,000 tons were utilized in the United States, and with it the work force began to grow and grow further.

It was in that decade, in the 1920's, that the first medical journal reported case appeared. In 1924 Dr. Cooke published a case of a young

the authorities so, that in 1929 Dr. Merewether, one of our great sources in occupational disease, was told by the government to do a survey of the asbestos industry in Britain.

He examined close to 350 people, and he found asbestos to be common. But he was confident, and reported in 1930, "The outlook is good. In the space of a decade or thereabouts the effect of energetic application of preventive measures should be apparent and a great reduction in the incidence of fibrosis."

Dr. Montague Murray's optimism was repeated. The Sinclair optimism was repeated, and now in 1930 we were told, "Well, now that we know, now that there is scientific information, things are going to be all right."

And with that optimism, instead of 1,999,000 tons used in the decade of 1920 to 1929, despite the depression we again used almost two million tons, and we again employed thousands and thousands and thousands of men in the manufacture of asbestos products and in their use.

These workers, however, began to feel uneasy, not because in the United States our government or our industry told them we should be worried, but they heard about what the articles were saying in Great Britain, and the Asbestos Worker, the journal of the insulation worker's union, in 1930 published an article called, "The Pulmonary Asbestosis Menace," in which Mr. Mullaney, their president, said, "Look, I've been reading articles from Britain saying that this dust could cause harm ... What about it?"

And he was reassured: There really is no great problem. Besides, now that we know, things are going to be all right in the future. But the future was not all that good. In 1935, in addition to the scarring of the lungs that the British had been reporting, that Dr. Hoffman had talked about, that Dr. Pancoast saw in X-rays, Dr. Kenneth Lynch, at that time professor of pathology at the Medical University of South Carolina, reported a case of lung cancer found at autopsy in a man who also had asbestosis. He suggested there might be some association between the two.

And Dr. Gloyne saw another case or two in Great Britain, and he said the same thing. And Dr. Nordmann in Germany also said the same thing. In fact he titled his article, "The Occupational Cancer of Asbestos Workers," 1938.

In fact, it was sufficiently worrisome for the Public Health Service to institute a survey in North Carolina under another very capable physician, Dr. Dreessen. Unfortunately, just before the survey some 150 men in these plants who were thought to have asbestosis were fired. And they weren't around for Dr. Dreessen to see. In fact, when he went there, there were only three people who had been employed for 20 or more years.

Nevertheless, he did find some problems. And in 1938 he made a recommendation -- an advisory. He advised the industry to do dust counts. And he felt that, if the advice was followed, "It appears...that, if

asbestos dust concentrations are kept below this limit, new cases of asbestosis will not appear." Somehow the advice doesn't seem to have been followed, because when I've gone to a number of asbestos companies or government agencies -- or what have you -- to find out what the dust levels were like in the 1930's and 1940's, no dust counts were done.

So that advice -- gratuitous, perhaps -- was not followed. And there was this optimism. And with that optimism instead of 1,888,000 tons being used from 1930 to 1939, in the next decade from 1940 to 1949, 4,654,000 tons were used. We more than doubled the amount of asbestos used, and we vastly increased the number of people who began to work with it. Obviously, now that we knew -- now that we knew that this dust caused death, things would be all right in the future. It was at that time, in 1941, that dozens of factories like the Union Asbestos and Rubber Company plant in Paterson, New Jersey were established to make asbestos products for the U.S. Navy. We had just entered World War II.

And from 1941 to 1945, 933 men in Paterson and the environs went to work there, because now that we knew, somebody was obviously taking care of things. Unfortunately, as it turned out, there was no somebody.

And the next decade gave us further worry, because in the 1950's the first reports began to come that not only were lung cancers to be seen, but even an otherwise very rare cancer, mesothelioma, a neoplasm of the lining of the chest and the lining of the abdomen. The first cases began to be

seen in the mid-1950's, were reported, and in 1960 it was even found that it could occur with very little asbestos.

But this information was never used. And instead of the 4-1/2 million tons between 1940 and 1949, in the decade from 1950 to 1959 when most of the cases with asbestos disease that we're now seeing first went to work, we used almost 7-1/2 million tons of asbestos in the United States. By this time we had now used over 17 million tons. In the 60 years since the first scientific information began to appear and the first hints of disease were noted and the first beginnings of our congratulating ourselves that -- now that we knew, things would be better.

But by the early sixties, disease began to force itself on our attention. I say that advisedly because, well, you may ask yourself, why wasn't this obvious before? There's a good reason. Because when these people die, they die one at a time, and nobody sees them. When they get cancer, they're no longer in the workplace. Their buddies don't see them. They don't go to union meetings. They don't come to testify here. They're hidden away in little rooms somewhere in the back, if they can afford to keep their house, or in a trailer camp, if they can't.

Even doctors don't like to see them. They feel -- doctors feel helpless. They can't help these people, and they'll think of all kinds of excuses not to have to make the visits because they know they can't help these people. And so they die one at a time, quietly, and it's not until the experiences are added up that things become clear, and that's why

most of the occupational disease in this country is virtually unknown. On January 1, 1943 there were 632 men in the pipe coverers union in New York and northern New Jersey. They have been followed since. And let me tell you what happened to 632 American workers who in the 1940's, 1930's, felt comfortable that somebody was taking care of things.

By January 1, 1977 -- these data will be published shortly -- it was calculated that of these 632 men there should have been 330 deaths in the normal course of events, had their experience been the same as all other U. S. white males. Blacks were spared this disease because they often couldn't get into the building trades unions.

Instead of 330 deaths there were 478. Now, why -- why -- why did so many extra men die? Well, instead of 56 deaths of cancer that were anticipated, 210 actually occurred. Of these, instead of 13 deaths of cancer of the lung that all other Americans would have suffered, there were 93. One out of every five asbestos workers here who died, died of lung cancer.

The dimensions of this disaster? I think perhaps Professor Stallone at the University of Texas, School of Public Health, has stated it best. He said that this "constitutes a public health catastrophe."

Instead of no deaths of mesothelioma -- that's been so rare in the past, oh, somewhere around one out of 10,000 -- we wouldn't have expected a

death. There were 38, almost a thousand times as many as you would expect. And there were deaths of cancer of the esophagus, of the stomach, of the colon, the rectum and, of course, the death of scarred lungs, which we would have expected.

We have also looked at the experience of all the asbestos insulators in the country. On January 1, 1967, there were 17,800 men in this little union in the U.S. and Canada. About one out of four insulators in the country is a member of this union. And by January 1, 1977, instead of 1,659 deaths there were 2,271. And, once again, it was primarily due to cancer. Instead of 320 cancer deaths there were 995. Forty percent of all deaths in this group of asbestos workers were due to cancer.

Instead of 105 or 106 deaths of cancer of the lung, there were 486. There were 175 deaths of mesothelioma. There were excess deaths of cancer of the stomach, the colon, the rectum, the kidney, the tongue, the oropharynx, the larynx. In fact, when you look at when these occurred, you find that the lung cancers really didn't appear until 20, 25 or 30 years following onset of exposure. At 35 years one third of all deaths in this group are due to lung cancer, one out of every three.

These kids begin work at 18, 19, 20. They don't die until they're 40, 45, 50, 60.

For lung cancer it doesn't continue to climb. You get a peak at around 30 to 35 years. Then the ratios decrease. Good reason why, because of the association with cigarette smokers by the age of 50, most of the, you know, good many of the smokers are dead, and those who are left have fewer smokers among them. And the combination is such that you won't see as many -- the susceptibles aren't there anymore -- in our lingo.

For mesothelioma there's no such relief, however, because so far -- at least as of 45 years from onset -- they're still climbing. We've traced the men in the Paterson factory. And by 1977 we found exactly the same thing. Instead of 19 deaths of lung cancer there were 100. There were the deaths of mesothelioma, of asbestosis and so forth. But here there was a very unusual state of affairs. Because of wartime conditions some of the men had worked for a week, a month, two months, six months, waiting to go in the service. Other men, the older men often worked until the plant closed in 1954.

We found that of the men who worked even one month, when you trace them 35 years later, the amount of lung cancer they had was 2-1/2 times expected, even one month of work, actually even less than one month of work. They walked out of the plant, after a month, but the imprint of that material was still with them.

Now, the more they worked, the greater the ratio of observed to expected deaths. The greater the exposure, the more the disease. The conclusion that now bedevils us everywhere is that a brief exposure, if excessive, can produce disease and provides no safety.

We have other interesting information. We found in 1967 that there was an extraordinary combination of the two, smoking and asbestos, the combination giving much more cancer of the lung than either one by itself or even by the simple addition of the two.

We've studied this further, and these are new data that will be out in about a month. In the group that we began to follow in 1967 there were over 12,051 men who were more than 20 years from onset of exposure. Now, these are the fellows we now knew were at risk. We got their smoking histories. Almost 7,000 had a history of cigarette smoking, and only 991 had never smoked.

If you work with asbestos but don't smoke, the risk of dying of lung cancer is approximately 55 per 100,000 man-years, as against 11 if one neither smoked nor had asbestos exposure. If you don't work with asbestos but if you do smoke, it's even worse. It's 122. Apparently, by itself smoking is even worse than asbestos in terms of lung cancer, although you don't get mesothelioma with it. But if you're unlucky enough to have both asbestos plus smoking, the rate is 601. The combination of the two, the multiple factor interaction.

Moreover, we found something very interesting. I hope you will emphasize this. We found that, when we looked to see what happened to the men who had smoked cigarettes but who stopped after ten years, their risk of dying of lung cancer was only about one third of those who smoked and continued to smoke. So even with asbestos in your lungs you might save your life if you stop smoking.

Now, all through this time not only was asbestos increasingly used, but the precautions that we thought were being taken were not being taken. This is a tragedy. We were told in 1930 by Dr. Merewether that strict regulations were being put into effect and things were going to be all right in about ten years, about a decade or so.

You can imagine our consternation when we picked up Lancet, the leading British medical journal in 1976 and we read that, although the regulations that we were told by Dr. Merewether in 1930 were rigorous and were going to be effective, that although these required that no asbestos dust should be allowed in the work room, they were so riddled with loopholes that the requirement was --from the outset -- "no more than a pious aspiration." We were kidded for almost 40 years.

Now, that kidding was particularly disadvantageous because in the next decade we used even more asbestos: 7,561,000 tons in the United States. By 1970 we had 25 million tons of asbestos in place in our buildings, in our shipyards, in our construction sites, in our refineries, in our chemical plants, in our schools, and in our houses. We now have 30 million tons of asbestos in place, put there over these decades.

We have gone to the wives and children of the 933 workers in that Paterson plant. We've traced them, last year and the year before, and of the first 626 we've X-rayed -- they feel fine -- one third have characteristically abnormal X-rays.

And just tracing these people we've already come across five mesotheliomas. One was already dead when we first came, the daughter of the plant manager.

The next was a young man of 44, alive when we sought him. He was operated on. He's died since. His dad had worked there for one year and used to come home without changing his clothes. Nobody told him to.

Another young woman was 39 when she died of mesothelioma. We couldn't help her.

That plant closed in 1954. It moved its machinery to a little town in Texas -- Tyler, Texas. And you know what's happened there. That was such a good product, asbestos that they opened another plant in Port Allegheny, Pennsylvania, in 1964.

In 1978 some of the men began getting short of breath. So the union chartered a plane in Bradford, Pennsylvania, near Port Allegheny, and flew 38 men in to see us. We X-rayed them. These were the first men who worked there, starting in '64. And of the 38 men there were 38 with abnormal X-rays, a tale of three cities. A legacy of the past.

Those 25, 30 million tons -- many of them were sprayed in schools and in buildings. Because as we go to the chemical plants and refineries of this country, where much of this 25 million tons is still in place, and we

examine the maintenance workers there, the steam fitters, the plumbers, the carpenters, the electricians who have to deal with this, we find disease. In one plant, for example, in Bound Brook, New Jersey, the American Cyanamid Company plant, we found that of the men who have been maintenance workers there for 20 or more years, almost half have abnormal X-rays.

Our shipyards. Four and a half million men worked in our shipyards in World War II, when we took over the shipbuilding and ship repairing for the free world. This reached one and three-quarter million people in November of 1943. Today, there are over 200,000 workers in our shipyards, all over the United States, doing ship repairing. Our ships have asbestos in them and there are over 200,000 men who are now repairing these asbestos-laden ships.

I was visited a few weeks ago by the health and welfare committee of one of the unions. They say they know when to take the mirrors off the wall. When they go to see a worker with lung cancer or mesothelioma, et cetera, in the hospital, they have learned about three or four weeks before he dies, they take the mirrors off the wall so that he doesn't have to look at himself. Perhaps one might conclude with the words of a lagger at an Australian power house, and the Australian Broadcasting Company broadcast his speech, and he ended and he says, "by God, we're sleeping on dynamite!"

(Applause)

MR. CASTLEMAN: That's kind of a hard act to follow. Do these microphones work? Okay. This one does.

Irving, since I was here, was able to be a little bit charitable about the nonscientific reasons why some of this came about, which I would like to discuss. Actually, before the first case of asbestosis recorded in any kind of medical discussions was the death of the founder of the Johns-Manville Corporation, Henry Ward Johns, in 1898.

And Mr. Johns, according to his death certificate -- is this right, Paul? -- had dust phthisis pneumonitis. Mr. Johns was an inventor, and he was the founder of the modern asbestos industry in North America. In 1930, 1929, the asbestos industry went to a doctor with the Metropolitan Life Insurance Company, with whom they had policies, Dr. Lanza, and they asked Dr. Lanza to do a study on asbestos disease in the plants, in the mines.

When Dr. Lanza had completed writing up his study for publication four years after the work had been completed, in 1934 -- at the end of 1934 -- he sent the galley proofs to the lawyers for the Johns-Manville Corporation, and they made some editorial suggestions which they explained would -- in their correspondence, it was well explained that they were concerned about compensation for asbestosis in New Jersey where they had their largest plant, and that since the state of New Jersey was considering making silicosis a compensable disease, it would be helpful to have something in the medical literature to the effect that asbestosis really was not so serious as silicosis -- so that asbestosis wouldn't, also, be declared a compensable disease in the state of New Jersey.

That was 1935. The state of New Jersey did not make asbestosis a compensable disease until 1945. Asbestos Magazine was the trade journal since 1919. Correspondence unearthed during legal discovery has shown that Asbestos Magazine deliberately didn't print any articles on asbestosis despite the fact that they knew about the British medical literature in 1930, and that they periodically came to companies like Johns-Manville and Raybestos-Manhattan, asking if it would be all right to finally run some articles about asbestosis and dust control.

And the correspondence in 1935 included statements like, from Vandiver Brown, the attorney for Johns-Manville, "I agree with you that the less said about asbestosis, the better." There were other studies done that were never published. The Saranac Laboratory for Research on Tuberculosis in upstate New York made agreements with the asbestos companies in 1936 and 1937 to do animal inhalation studies. These animal inhalation studies, if negative, would have been published, according to the correspondence by the asbestos companies who supported them. Also, according to that correspondence, there would be no publication allowed unless the companies saw fit to allow the scientists who had done the research to publish it. A lot of that stuff was not published.

One of the studies that was not published was done for Owens-Illinois, and most of the asbestos cancer and asbestosis that we're seeing today was caused by the use of asbestos insulation, because this is a product that was very widely used in shipyards and construction, and Owens-Illinois actually tested the dust from its insulation product in 1943 and onward

at the Saranac Laboratory. And in 1948, they received a report to the effect that the dust caused asbestosis in rats, and that it's too bad that the product is a dangerous product, and we're sorry to report that to you, Owens-Illinois, but at least now that you've found this out in test animals, you can take steps to protect your own interests and to protect workers, and so, at least we found out ~~on~~ test animals -- instead of industrial workers -- about these hazards.

The products continued to be marketed with no warning labels, however, and no attempts were made by manufacturers of insulation to conduct studies that were published and alert the work force, the growing work force of shipyard workers, construction workers and insulators especially, who were every day sawing up these things in basements, tearing off the old insulation in the ship engine rooms, and being exposed to dense clouds of asbestos dust.

Well, there are many more cases. The trade association minutes of the Asbestos Textile Institute, the trade association minutes of the National Institute -- the National Insulation Manufacturers Association, revealed repeatedly a recognition that cancer was a problem. It was recognized in 1955 and 1957, and a very clear fear on the part of the industry according to these minutes, of stirring up a hornet's nest, by calling attention to this fact by doing studies.

I'm concerned about prevention. I'm not going to talk much about regulation. Others can talk about regulation. I want to talk about workers' compensation and product liability, and criminal code revision.

and hazard export, all of which I have learned a great deal about from the asbestos industry.

Workers' compensation has extremely low limits. A woman in Baltimore was recently awarded workers' compensation for mesothelioma, which she got from working in an asbestos plant as a secretary. Her compensation amounts to $35 a week because she last worked there in 1955, and the compensation that's awarded is based on what she was paid in 1955.

It's no accident that there's no cost of living allowance in these workers' compensation laws, and that people in Manville, New Jersey are getting five dollars a week compensation for having totally disabling asbestosis.

The statutes of limitations in many of the state workers' compensation laws are absolutely vicious. If you get an occupational disease more than three years after you last worked for the employer, in some states, you are ineligible to make a claim for workers' compensation. The laws were originally sold as broken-arm legislation, and legislators who passed them were induced to believe that if somebody didn't know he had a broken arm in three years, then he didn't deserve to get any compensation.

There are all kinds of other obstacles to claimants. Suffice it to say that in order to bring a workers' compensation claim, you have to get a lawyer, you have to get a doctor, you have to get the doctor to testify that you had an occupational-related disease, you have to show that in the state where you're making the claim, you qualify in terms of having

sufficient residence and not being nailed by their statute of limitations. You have to suffer the needless delays and deliberate delays that will be thrown in your path.

I've seen workers' compensation claim files nine inches thick that went on three, four, five years, people with total disability, trying to get compensation for asbestosis. How these people lived during the time that all this was going on, I really don't know. How they just paid the regular bills, much less the medical bills.

This is still going on today. In the state of New York, after Dr. Selikoff's fine work was published in 1964 -- incidentally, these figures he shows are really not much different in terms of the proportion of mortality in the work force dying from the various forms of cancer. We just have more data now than we had 15 years ago. But 15 years ago he had already found that one in five of these people were dying of lung cancer.

And, so, you would think that in the state of New York, at least, there would be a lot of people getting compensation for occupational cancer. I've recently gotten some figures from the state of New York, and for the past 12-year period, there have been a total of less than 60 people who have been compensated for occupational cancer. There were about five per year.

Okay, the microphone is not working terribly well, so I'm just trying to speak up loud. And if you can't hear me, please sort of raise your hand or something like that.

Now, one of the things that's happening is that workers are so desperate to get some kind of compensation and pay these bills that they eventually discovered that they had the right to sue the sellers of the products they used. In other words, insulation workers who were handling Owens-Illinois insulation in the forties and fifties, Johns-Manville insulation, Armstrong-Cork insulation --

It turns out that if you used the product that had a treacherous hazard that was not obvious, and the manufacturer of that product knew that the product had this treacherous defect, then the manufacturer had certain duties to you as the consumer of the product.

The manufacturer, first of all, is considered an expert on the hazards of the product. The manufacturers read the German patent literature, they don't have any difficulty with the language. They also read British, which happened to be the language that most of the medical papers were in. Medical papers were available in the United States, and the manufacturers were charged with being experts on the potential hazards of their products.

Derived from this is a duty to warn about the hazard of that product, and the failure to warn, among other things, deprives the worker who uses the product of the right to choose whether or not he wants to take a mortal risk. So these people were not kept in the dark about how to reduce the dust and just use simple housekeeping measures to keep the dust down, they weren't even told that this stuff was dangerous to breathe.

The manufacturer also has a duty to test the product, under the law. The manufacturer has a duty to seek safe substitutes, but if you own the biggest asbestos mines in the world, you might not be too interested in finding substitutes for asbestos insulation. And, anyway, the manufacturer of a product like this who builds his fortune on the sale of a product like this, and provides no warnings, no labels -- by the way, the first warning labels on asbestos products did not appear in 1934 or 1944 or 1954. It was 1964 -- after Irving Selikoff came down from Mt. Sinai with the news that asbestos was bad for you -- that the warning labels were first put on by the astute lawyers for the asbestos companies who realized that the time for delaying on this had completely run out on them.

Now, these lawsuits are probably as effective as all the regulations that OSHA could ever put out and enforce, given the handicaps that OSHA operates under, in providing safety, not necessarily with asbestos, but with a lot of other things that are around which are subject to the very same laws. The manufacturers are keenly aware of this, and they have gone around to all the state legislatures trying to gut the state product liability laws, and rig them with the same statutes of limitations and bars to the presentation of evidence and new defenses that the laws now don't allow them to bring, such as the government didn't know about it. Well, never mind the fact that they kept it from the government, but if the government didn't know about it, then that makes it a good defense for the companies to say, well, we didn't know about it, either, even if they did fire 150 of those workers in the textile mills before the government came in to do its survey.

But, anyway, these kinds of defenses are being put into some of the laws. In Colorado, where Johns-Manville's headquarters are, and a lot of other -- and at least a half a dozen other states that I've heard, Tom Henderson is here, he could probably tell any of you who wanted a better rundown, and this is really taking away a basic right that people need. If people can't sue for the sale of products like that, then you're just encouraging the marketplace to be littered with nothing but Ford Pintos and Firestone tires and other kinds of products that manufacturers have known were deadly products, that had hidden defects, and decided to put on the market, anyway, because they felt that they could make plenty of money selling these products, an then later on maybe they'd have to pay a little of it back in damage suits.

Now, there's -- of course there are problems with product liability laws, too, even as they exist. The enormous delays in getting a case to court, the fact that the lawyers who represent the plaintiffs have to be extremely well-financed and well armed to put out the front-end expenses in order to prosecute these cases. Sometimes they'll be fighting the industry and you take on 25 of the biggest companies in the United States, you can be pretty busy trying to get any damages out of them. You might get compensation of some kind, you might start getting something in four or five years. And as a result of this, the lawyers are charging something like 35, 40 percent of the take when the money finally starts coming in. And an enormous amount of the money that's being paid out by the companies, and will be paid out by the companies and their insurance carriers, to the

victims of asbestosis and cancer and the victims of other products, is being consumed in legal fees, which may lead ultimately to changes in the law, to directly transfer the money through some bureaucracy to the workers.

The problem is, that the deals that have been so far offered are pitifully small in terms of compensation that the workers would get. I have in mind a bill proposed by Millicent Fenwick which was drafted in Denver -- Mrs. Fenwick has a town called Manville, New Jersey in her district -- but this is going to be argued about in the Congress for quite some time, and there is a chance that some deal will eventually be struck.

My only feeling is that the deal should be based on the predicate that the companies are guilty as hell of having known that these products were dangerous, and selling these products without doing what the law requires them to do, and that the compensation should be according to that.

And these other kinds of pretenses that are being offered, that the government should have done something and that the unions should have done something, are really beside the point.

The next thing is the need for changes in the criminal code. Again, we're talking about prevention. And you've got to wonder how things like Firestone tires got out with the president of Firestone being told in 1972 that those tires were no good, that they were defective, an yet still the tires are being sold.

This is a product that doesn't have a 30-year fuse. They knew that in five or eight years they'd be in court, they'd be deposed by plaintiffs'

lawyers for the rest of their lives unless they left the country, that the company would be hit with a big government fine, that it would be hit with $100 million recall. And they still went ahead and sold these tires.

Well, what else could possibly have been in our system, our American system of justice, which might have prevented that from happening? And what was needed was for the people who were making those decisions to know that if they got caught, they'd do a lot of time in jail, and it would be called murder.

And Congressman George Miller of California has proposed that the federal criminal code be improved along these lines. And there are going to be Congressional hearings starting this month and going into next year, where a lot of these things will be discussed. There have also been cases -- it's not just asbestos, not just these other products. Du Pont had a policy of not telling anybody that benzidine was carcinogenic, even though they recognized internally that it was. For 24 years they were making benzidine dyes, after they had acknowledged this in discussions which have recently become public.

And the last thing I wanted to mention is the exportation of the hazards, because now that they are being controlled, recognized and regulated in the United States, you have the problem of exporting them. These are the minutes of the Asbestos International Association, which has membership from asbestos companies in 24 nations. And they had a meeting in which one of their committees discussed the problem of warning labels.

They're developing markets in the Third World. They are selling a lot of asbestos cement products, people are building houses out of these

things, and they're selling a lot of other products. The manufacturing processes are probably not very well controlled in countries like India and Mexico and the use of the products in the field may very much resemble the sort of thing that was going on in the United States 20, 30 years ago. I hesitate to say today that there's probably a lot still going on here today.

And this is from the minutes: "In those countries where it was felt it was still too early to start voluntary hazard labelling, in fear of a possible negative influence on sales" -- well, I don't need to read you the rest. This is dated May 20, 1978. And not everybody agrees that these hazards can simply be controlled by the regulatory process such as the one we have in the United States, which is doing such a deplorable job on asbestos.

The International Metal Workers Federation, which is an enormous federation of trade unions, including American Steelworkers Union and the Auto Workers, has just issued a special policy on asbestos and asbestos substitutes, and they are really determined to get rid of asbestos. There are a lot of uses, including brake linings, which are now substitutable. Brake linings can now be made without asbestos. General Motors is making them, a company in Australia is making them, and the Raybestos-Manhattan Corporation is.

And when you think about the fact that we've got a million people doing brake repair alone in the United States, many of them blowing off the brake dust with a compressed air hose, there isn't anything you can tell

these people about how they shouldn't do it. That's just the way they do it. I've had that experience.

And if the product was safe, if the dust was safe to breathe, then you wouldn't have to worry about going around with standards to protect a million workers who are working in all those brake repair establishments. So those are just some issues that I thought I'd throw out that I learned about from asbestos.

(Applause)

DR. KOTIN: As you commented, Irv's scholarly presentation was a difficult act to follow, your very balanced presentation is a very easy act to follow. Let me make three or four comments first. First, if you want to assist, I guess you've got some problems. That's the physician in me speaking.

First, let me state that asbestos was hardly the invention of a demon. I think first it's very important to mention that, by and large, the historical review that Dr. Selikoff gave reflected many, many things. And by far the dominant theme through his presentation was one of tragedy and there's nothing in the world that can gainsay that. Asbestos-related diseases are a reality, there is an unfortunate complement of workers who in the past were exposed to sufficient amounts of asbestos that created asbestos-related disease. Make no mistake, as Dr. Selikoff implied and I will state, there are an uncalculable number -- I wouldn't know how to calculate the number of people in the latent phase, so that indeed we're going to see asbestos-related disease for some time in the future,

essentially unrelated to the exposures of today, yesterday, or the very recent past.

But with it all, and looking at Dr. Selikoff's figures, two things came to mind. First of all, for the material to be used as universally as it was, and to be as rapid in its growth indicates at the very least, it served a very useful purpose in society, a useful purpose that is measurable in lives as well.

It's interesting to note that the two biggest jumps in Dr. Selikoff's chart covering the use of asbestos were the years of World War I and the years of World War II. And having spent some time on a battleship in World War II, at the time I didn't know it to the extent that I know it now, but I would have been comforted by knowing there was some fireproofing material. How much happier all of us would be if this fireproofing material had no concomitant hazard associated with its excessive use.

Several other things come to mind from Dr. Selikoff's presentation. And that is, the omissions of the past, as he puts them. The -- I find it difficult, though I, don't know for a fact -- to assume that Dr. Merewether was in the employ of any of the British asbestos industry when he -- as we can now see retrospectively -- took an optimistic tone that subsequent facts have not verified. The kudos Dr. Selikoff gave Dr. Dreessen in terms of his status as a Public Health Service investigator were well-merited. And, again, I have no way of knowing, but I would suspect that Dr. Dreessen, as indeed subsequent time has proven him to be wrong, was wrong on the basis of the conviction and the scientific knowledge that allowed

him to achieve the position that he did in the U.S. Public Health Service.

And then finally, as Dr. Selikoff pointed out very eloquently, that it is within the very, very recent past -- or I wouldn't say -- perhaps, a decade or plus, that the asbestos-related cancer, no less than the other cancer, was a cancer that didn't carry with it some form of an outcast or a pariah connotation, so that it went off into the room by itself, the back room, if they could afford a back room. So that, indeed, all concerned were not as informed as they might have been.

It is really very, very difficult to comment or add anything on what the past was about, so what I would like to do is -- I assume I was put on to close the triangle, not only as a representative of industry, a representative of an asbestos company, but somebody who I would hope my peers would agree has some knowledge of asbestos and asbestos-related disease.

So we've heard the reflections of the past, and I'd like to take a very few minutes to discuss current efforts, and a look to the future. And there's no other way I can do it than in a highly personal way. The name Johns-Manville is not foreign to you, or at least, if it were 20 minutes ago, it isn't now. And what does a company like Johns-Manville do, which I suspect is really no different than other companies.

We're aware of a problem, and as you've heard before, there are some very serious concerns as to whether they were aware of it as early as they might have been, or they might have acted as early as they did. Well, first of all, they find somebody to do something about it. And, again,

just accept the blanket apology for the next five or ten minutes insofar as the personal pronoun is concerned, because that's the only way I can make the points. At my stage in life, having passed 63 years, I've got nothing left to prove and I'm certainly not campaigning for a job or an office. They went out and hired an unknown, an unknown who has had no experience in the field of industry, an unknown who, as bad as the word is, I think is responsible for two rather significant and costly agents to industries being banned. And they did another thing that I think is important, assigned ultimate responsibility to him at a level that carried some muscle.

For what it's worth to you, I guess I'm the equivalent of a full professor with tenure in business. This can be translated into a senior vice-president, and one who is a -- has ultimate responsibility. So anybody who is looking for any person responsible for things from 1974 on, you need look no further, it is I.

Well, what has happened in these years? First of all, I think an assessment of the legacy of the past was most important. And this we are doing. And obviously the template for our assessment of the legacy of the past are the studies of the United States, of Dr. Selikoff and his associates, primarily the beacon light that the 1964 conference represented. He is still one that has $10^{50}$ lumens in terms of pointing to directions.

Assessing the legacy of the past is a firm foundation on which to decide what to do at present. And this brings me to an action program. It can begin with many components of the action program, but let's begin with

the worker. This entails medical surveillance, it entails utilizing the absolute leading edge aspects of medical sciences in terms of seeing what the impact of the workplace is on the worker, and also treating the worker as a totality, a person with infinite experiences, multiple experiences that have a major impact on the workplace.

You also have the problem of education, and here, management needs education fully as much as the worker, and here, of course, to succeed particularly in worker education without cooperative or collaborative relationships with the worker or his representative, you're not going to get anywhere. And efforts are being made, and successful efforts have been made, to do this.

It's a new world for management and the worker. Their relationship in the past has been, quite legitimately, the adversary relationship that goes around the bargaining table. We'll give you ten paid vacations, you want eleven. You want so many cents per hour increase, we'll give you half of that. And these are legitimate adversary relationships with collective bargaining, which over the past half century has evolved into a very, very fine science.

Regrettably, health issues do not lend themselves to the adversary relationship of collective bargaining if they are going to be successful. And make no mistake, for all of the pejorative terms one might direct towards corporations, corporations are a reality. They're integral parts of our system. I suppose a different forum would be a good place to debate whether indeed it's the best way to -- for an industrial society to

operate -- but nevertheless, for the moment, we do have the large manufacturer.

And the large manufacturer in the world of OSHA is the manufacturer who provides clearly and beyond any question the least hazardous workplace. If there's nothing else that the regulatory agencies in relation to the workplace have emphasized, it is the problem of the small employer. And it's the small employer who encompasses some 70 to 75 percent of the work force.

As far as management is concerned, again, Dr. Selikoff has seen the curriculum of a course that I give called toxicology for tycoons. And again, the management has to be educated, this is a new world for them as well. As far as the work environment is concerned, I suspect there would be unanimity between the three of us -- and don't faint, don't faint -- that by and large, the standards set, whether it's numbers of fibers or milligrams of dust, or parts per million of an aerosol, represents the point of departure. It is not the end point.

Compliance carries with it the necessity to go beyond compliance, push beyond. And I think responsible industry recognizes it, and nobody would really seriously challenge the fact that the technology that is available to you for worker protection that you don't apply represents some form of a dereliction..

As far as the product is concerned, again, I think labelling is more than just an abstraction, it's how informative the label is, how useful the label is. I brought some to show, but basically the time is late. I'm

very proud of labels with translations in six languages and labels that, again, catch the eye and do not avoid the eye. A selling policy is another item that one concerns with products that are potentially hazardous. And, again, selling policies do exist.

And this brings me to -- in this very abridged way, since we're past out time already -- to a growing recognition, and it's a recent recognition, and it's one that is part of the evolution of the society, if you will, of manufacturers' concerns with end products as well. You cannot see anything advertised on television without the warning, "use only as directed." This innocuous, mealymouthed -- really perhaps -- meaningless admonition, is an indicator of the fact that end product concern is becoming -- and legitimately -- a management responsibility.

So in this very abbreviated way, I'm trying to tell you that there is no way one can do anything about, regrettably, the legacy of the past in the world of asbestos-related health problems. I think that the current efforts will be reflected in the future with an amelioration of the condition and the situation. I might disagree with Dr. Selikoff on what the number should be, three or four or one, but there is no disagreeement that the lowest number that you can get is the one you should get. And certainly, his data more than any suggests that the corollary of all these efforts is going to be a significant, hopefully complete elimination of the problem with the passage of time.

Thank you.

(Applause)

MR. PEARCY: We do have time for questions. If any one wishes to address questions to anyone on the panel, please approach this microphone over here so we won't have to repeat the questions.

MS. KING: My name is Wendy King, and I'm from Toronto, Ontario, and I'd just like to challenge Dr. Kotin - I'm not working with any organization right now -- I'm doing free-lance work which I hope will appear in the Globe and Mail. And we recently had a story on asbestos in the schools in Hamilton up there which I was responsible for. I would beg to differ with you, Dr. Kotin, that there is nothing we can do to deal with the legacy of the past. For example, when we have to try to trace where all the buildings are that contain asbestos, whose money is being used to do that work? I don't know what the situation is down here, but in Canada, the Ministry of Labor, the Ministry of Health, the Boards of Education these are the people who are putting the time and money and effort into finding out where the asbestos is, and assigning personnel. In our Health Sciences Center, we're training industrial hygienists.

It's a question of responsibility, and I'm wondering if that's been taken into account with Johns-Manville. What percentage of your budget is now being set aside to deal with the legacy of the past, and do you think it's fair -- I'm sorry, I am going on, but do you think that the public money should be spent to clear this up, or should it not be a joint responsibility?

DR. KOTIN: Well, first of all, I appreciate your making the point, because when I said the legacy of the past, I was speaking more with my

M.D. than my J.M. I was thinking about the -- so I'm glad you brought that up, so I can clarify that.

The question you raise is a very fundamental one. And that is, what constitutes the responsibility of government under the public welfare, if you want to become very fundamental, the public welfare aspect of the Constitution. To carry the position you take to its end, what you're saying is, government should do no research on any aspect of any potential health hazard or any demonstrated health hazard as a legacy of the past because of the fact that, as part of the society in which we live, it represented a consumer product.

I don't know what the answer to that is, but in my ten years in government, it's one we used to ask: Why in the world should we do any research on a safer cigarette, if there is such a thing? Why in the world should there be a National Institute of Environmental Health Sciences, the director of which is in the back of the room and the former director of which is at the table here. And why should NIEHS really do any work, or the National Cancer Institute do any bioassay on a variety of products which somebody ultimately is going to make a buck on? And ultimately, speaking very, very candidly, somebody ultimately may, if there are going to be latter-day cohorts of asbestos, and we hope not, somebody may get hurt by it.

I don't know what the answer to that is, and I don't think the question can be answered. It's a societal question, not an agent question or a company question.

MS. KING: I'd just like to add a very brief corollary to that. And I think, considering the fact that the company knew what the hazard was, and medical doctors knew what the hazard was, I would say a lot of the burden of the cost of this legacy in all terms should be borne by the people who could have told us.

That may sound punitive, but I think that's where the responsibility lies.

DR. KOTIN: Fortunately, the gentleman at my right is the one person I know who can say this, and we've never discussed this. But I would assume that there was some question as to the completeness of the data, the totality and the soundness of the case that prompted Dr. Selikoff to undertake what has been for these decades, the model study.

There is a need for hard data for important societal decisions. But I apologize for putting words in your mouth, Irving. I'd like to hear what you have to say, and I may be sorry I asked you.

MS. KING: Could I just interrupt again, very briefly? In Fedford Mines, Quebec, they didn't call it asbestosis, they called it tuberculosis. They didn't have hard data of the type that you would now consider to be reputable, but they knew, just from watching people die in 1949, they didn't have to have epidemiological studies to know why the company would not use the word asbestos anymore.

DR. KOTIN: That I can't answer, I don't know about it. But basically, the substitution of one word for another is something I hardly condone. H-a-r-d-l-y, not h-e-a-r-t-i-l-y.

I agree with you, I just don't think you can call them any way than they really are, or should.

MR. BERMAN: Dan Berman, I'm the occupational health coordinator for Oil Chemical and Atomic Workers International Union. I'd like to ask Barry Castleman, in which states have there been concerted lobbying efforts to change the liability rules for property liability, and to talk a little bit more about which companies have been behind the lobbying, and secondly -- well, that's my first question.

And does that extend also to workers' compensation for occupational disease and in particular asbestos disease?

MR. CASTLEMAN: The bills I was talking about are generally Chamber of Commerce bills. The bills I was talking about are generally sponsored by the Chamber of Commerce. They're not usually sponsored by one company. The fact is that many companies have built their fortunes selling products that they either knew were harmful, ha' conducted tests that indicated they were harmful and didn't publish, or something else that they could really get nailed for in product liability court.

And it's just the -- the mix of products I mentioned before gives you the -- automobiles, tires, chemicals, asbestos. There are a lot of threatened vested interests when it comes to product liability. And I don't think you're going to find a very narrow range of companies that are doing all the work in order to gut the product liability laws in the various states.

They're going on in all the states. There are too many billions of dollars at stake for them to waste a chance to gut a state product

liability law.

MR. BERMAN: How about the development of workers' comp? I think there's a concerted national campaign by insurance companies and business representatives to make workers' compensation for occupational disease, particularly occupational respiratory disease more difficult to get at. And I'm thinking, I've seen the bill that was written by Johns-Manville representatives in New Jersey, as one example.

Could you talk a little bit about that? Is that the same story, basically?

MR. CASTLEMAN: Well, I mentioned the Fenwick bill. One of the things about it that's particularly distasteful is that it requires the worker to come up with 60 percent loss of earnings in order to qualify for compensation. And studies published by Joe Waggoner, who's unfortunately not with us today, show that there were a number of workers who worked literally 'til practically the day they died with asbestos and lung cancer in the asbestos industry. And these people couldn't afford to accumulate a 60 percent loss of earnings in order to qualify for disability compensation, because they had bills to pay. And they dragged themselves to work whether they were disable or not.

But I don't really -- I'm not really that up on all the different things that are going on with workers' comp. Suffice it to say that there seems to be very little happening to bring workmen's comp laws in the United States up to something that reflects the state of medical knowledge about, for example, the long latencies of these occupational diseases.

DR. SELIKOFF: May I add to that? One of the hidden scandals in our country is the failure of any system, including the workers' compensation system, to provide the minimum disability compensation for people who are injured. It's uncommon for a worker who's injured to get workers' compensation. The law almost seems to be designed to prevent workers' compensation from being given, except when you fall from a ladder or break an arm or lose a leg or something of that type. But that's injury, and even that's not all that good.

But otherwise, if it weren't for really some extraordinary attorneys in this country to fight against all odds, we would see -- we see very few, but we would see even fewer workers getting workers' compensation. It's a disgrace, and most of the rest of us are picking up the bill through Social Security, through welfare, through Medicaid, Medicare, for the year or two of life that these people have left.

And I hope some system is worked out soon, because this is an example of where assistance delayed is really assistance denied, because these people aren't around long enough, and their widows can't manage the legal problems involved. They can't get through the legal maze that's been set up.

MR. SOSHA: My name is Daniel Sosha, I'm an attorney and perhaps it's fortuitous that I happened to follow your remarks, Doctor, since I am involved in the defense of workers' compensation cases in Illinois. And I assure you, that's not the case in Illinois. In any event, I'm here to pose a question, because in acting for the defense, I'm trying to learn as much as I can about the subject.

And, Doctor, it seems the more I read, the more confused I get. Would you agree that experts, recognized experts in the field, disagree in many respects, with respect to the question of dose-response, how much exposure is needed for cancer to be considered asbestos-related? And I'm not referring to the mesothelioma type, I'm referring to the various other forms of lung cancer that are -- exist.

That's the first of my questions. I do have several others, and let me go into them, because the more I read, the more frightened I got, particularly when I learned that all of us have asbestos fibers in our lungs from the ambient environment. I, as a lawyer, can expect to have asbestos in my tissue. Does this mean I'm subject to developing asbestosis or lung cancer because of that? Are all of us subject to it? At what stage do we decide that the presence of asbestos caused the lung cancer?

Since I'm defending, I'm trying to find out if I have a defense in the first place. Are we all going to be subject to lung cancer? At what stage can you say, "yes, the asbestos causes it," and at what stage "no." And the reason I'm asking this is because some experts will say you first of all must have asbestosis present in the lungs, which is the fibrotic condition caused by the asbestos bodies. And others will say, "no, you don't need it."

You look at the statistics, and the statistics are run all over the place, depending on who's interpreting them and for what purpose they're being interpreted. I also read of the type of lung cancer. Some experts will say certain types of lung cancer other than mesothelioma are more characteristic of asbestosis, and others will say, well, if the tumor

is in the upper part of the lung, it's from the smoking. If it's in the lower part of the lung, it's likely from the asbestos bodies because asbestos is heavy. And they lodge in the lower part of the lung.

Can you give me some help, Doctor?

DR. KOTIN: Hardly, in the sense of the scope of your question. I think, to answer your question in just two sentences, first of all, the relationship of asbestos to the causation of asbestosis, mesothelioma, and Dr. Selikoff and I may disagree as to how important the number is in terms of the indispensability or the necessity for cigarette smoking, but basically, there's just no question that the cause and effect relationship exists for these diseases.

Each case itself has to be looked at individually, and I don't think you can generalize insofar as questions as to what constitutes the -- an adequate dosage or an inadequate dosage to impute any cause to a lung cancer or any cancer, is what you're asking.

There's no magic number, and if there were, we would be in a position to make some generalizations that would preclude the necessity for much of the deliberations of this meeting. You begin with the fact that you're dealing with a non-spurious relationship. Asbestos can cause these diseases. And you go from there.

DR. SELIKOFF: Would you try some of the specifics? Inasmuch as I don't participate in medical-legal work, he's got me in a corner here, to give some opinions. First, with regard to dose-response, there's no question that there is a dose-response relationship, not only for lung cancer but also for mesothelioma and surely for asbestosis.

The less asbestos that's been inhaled, the less the risk. Is there risk with very little asbestos? Yes, but much less risk, which is one of the reasons why strict control is so important. There is no threshold below which there will be no risk. There will be very few cancers with very little exposure, and if you as an attorney have some asbestos in your lungs, and I hope it's not from the building in which your office is, then you have very little risk. But is there some risk if there's some asbestos? Yes. But it may be so low that I hope we will not be able to detect it statistically.

Secondly, the part of the lung. Asbestos lung cancer can occur in any part of the lung. It's more likely in the lower parts, but it also has increased in the upper parts as well. Does asbestosis, the lung scarring, have to be present? No. Asbestos fibers in the individual vary in their biological effect. We don't know why. Umberto Saffiotti can testify how difficult it is in individuals to be able to give us mechanisms why it might occur or might not occur.

In some people, asbestos fibers produce lung scarring. In some people it produces lung cancer. In some people it produces both. In the majority of people it produces neither. And we can't tell you why. They are two different biological effects. One of the reasons it takes very little asbestos comparatively -- compared to what causes scarring -- to produce cancer, is that once the few cells become malignant and begin to grow on their own, you can take the asbestos away and those cells are off and running on their own.

So it doesn't take much asbestos to produce a huge cancer. It only has to produce the first bit of it, and after that we feed it ourselves until it grows enough to kill us, so that you don't need much asbestos. There is a dose-response relationship. All cell types are causd by asbestos, the same as are caused by cigarette smoking without asbestos. And, finally, with regard to disagreement, I think you've answered the question.

You said, there's disagreement according to the purposes for which interpretation is intended.

MR. PEARCY: We'll have to make this the last question. Go ahead.

MR. PRINCE: Anthony Prince, Steelworkers Local 65. My question is directed at Mr. Castleman. Or is it Dr. Castleman?

MR. CASTLEMAN: Mr.

MR. PRINCE: Mr., okay. My understanding is that legislation that you discussed that's coming out of California that it stemmed from the efforts of some of the shipyard unions to sue Johns-Manville for a billion dollars, which I think is the amount of profit they made during the period of time they concealed the effects of asbestos from those workers.

My understanding was that that began and subsequent to that the legislative activity took place. Do you know off-hand how that suit is progressing, whether it's continuing or been dropped or anything like that? Or do you know anything about it at all?

MR. CASTLEMAN: Well, they tried to bring a class action, and it's very difficult because of the individual differences in the damage the individual suffered and the different exposures that they had to certify them as a class.

So, to the best of my knowledge, there hasn't been a single class action brought by asbestos shipyard workers certainly in the United States. I mean, they're trying to get it, but they haven't gotten the courts to buy it yet. The legislation was another matter. It's just Congressman Miller, who has an asbestos plant in his district, where incidentally a lawsuit did get around workers' compensation. The workers' comp was not considered an exclusive remedy, workers are being allowed by the courts to sue Johns-Manville, even though that was their employer, for suppressing the knowledge of the hazards that they face and the medical condition that they were in.

But the legislation is a separate matter. Congressman Miller has just become something of an instant expert on occupational disease and how it happens in our society, and he's decided that criminal changes in the law might do something in terms of prevention.

MR. PEARCY: Thanks to our three panel members, and thanks to the audience.

(Applause)

# FUTURE GENERATIONS: REPRODUCTIVE HEALTH

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DR. INFANTE: ...I think this is an area that until recently has had little attention--that is the area of occupationally-related reproductive hazards. As a result, awareness of the occupational setting as a factor in the etiology of these problems is limited. Of concern is significant - - alteration in the physiological process of reproduction, including adverse effects, such as, and I'll name some of these: changes in genetic material, adverse effects on sperm, infertility, pregnancy loss, pre and post-natal growth retardation, physiologic and behavioral changes in offspring, structural malformations, malignancy induced during gestation, as well as other transplacental effects.

In the United States, an estimated 15 percent of couples trying to have children are infertile. Numerous studies indicate that 10 to 15 percent of recognized preganancies end in spontaneous abortion. Five to six percent of live-born children have congenital anomalies. Prematurity and low birth rate are two of the most significant problems in obstetrics today, since these factors are associated with more than 80 percent of neonatal deaths and are associated with low IQ's in neurological abnormalities.

Estimates of more subtle behavioral changes are not readily available because of obvious difficulties in clinical recognition and variability and age at clinical manifestation. There is substantial evidence that certain agents found in the occupational setting can affect normal sexual functions and the ability to produce healthy offspring.

It is essential to consider the possibility that additional environmental and occupational agents exert a toxic effect on human reproduction,

and are responsible in part for reproductive wastage. Even a small percentage increase in affected pregnancies due to occupational exposures would result in a large absolute number of such pregnancies.

In rare circumstances, epidemiologic study might be used to identify a reproductive hazard. The major obstacle to the identification of these hazards via an epidemiologic study is the problem with the insensitivity of the epidemiologic method of study.

We've had problems with sample size, so that if you were looking for a population to study you'd go out -- you can't find a large enough sample of workers exposed to make the study meaningful in terms of statistical sensitivity. Another problem that we have, and I say this as an epidemiologist, is that the end point cannot always be measured at birth. For example, most reporting sources are dependent on defects recorded at birth. Behavioral changes, or congential heart disease, for example, quite often do not manifest themselves until much later in life. So we have insensitivity in terms of recognition, even of problems that have occurred but have not become clinically manifest.

The sensitivity for measuring end points such as spontaneous abortion is further reduced by underreporting, resulting from either memory lapse or complete unawareness of the event being studied. For example, early spontaneous abortion may not be recognized by the pregnant woman herself. Thus, the shortcomings of traditional epidemiologic studies where assessing reproductive hazards would tend to increase the need for establishing presumptive hazard on the basis of animal experiments that many industries are already doing.

I'm not trying to discourage epidemiologic study. There are some populations that are large enough and of course, epidemiologic studies should be done in these populations that we're concerned about reproductive hazards.

Information received within the past year at OSHA has indicated that some industries recommend excluding women of childbearing capacity from exposure to a number of substances under various types of exposure conditions. Data form toxicologic and epidemiologic studies for these substances is currently being reviewed for transplacental effects, mutagenic effects, carcinogenic effects, and adverse male reproductive effects. Analysis of reports for 36 of these substances for which some corporations exclude women because of concern for the developing fetus indicate the following.

Reports indicating adverse transplacental effects could only be identified for 56 percent of these substances. F ··-eight percent of these same substances indicate either a mutagenic, carcinogenic or male reproductive hazard. For the same 20 substances that in fact reported as demonstrating an adverse transplacental effect, 50 percent also demonstrated mutagenic effect, 40 percent demonstrate a carcinogenic effect, and 50 percent demonstrate a potential male reproductive hazard, while 70 percent of the same substances indicate positive results for a combination of either mutagenicity, carcinogenicity or male reproductive hazards.

Now, two points need to be made from the review of this information. The first is that in the absence of data from epidemiologic studies, from

a preventive standpoint, we as a society have no alternative but to presume hazard if a reproductive effect is identified from a test in subhuman species. The alternative is to implement public health practice on the basis of post hoc enumeration of abortuses or children with birth defects.

Second, in the absence of adequate engineering controls, before proposing to exclude a specific subset of the working population such as women because of concern for effects on offspring, responsible parties need to scientifically evaluate the total spectrum of toxicological data. Otherwise, one may only be transferring the risk to the fetus through the male employee, or in the case of carcinogens or agents causing adverse testicular effects, the risk may be transferred to the male employee.

So these are some of the factors that I think we need to consider from the scientific standpoint, and I would assume that later on we're going to get into discussions from a social-political standpoint. However, I think that we'd have to base our decisions on the goods at the outset.

Now I'd like to introduce the first speaker this afternoon, Dr. Jeanne Manson, who is assistant professor of environmental health in the University of Cincinnati, and Dr. Manson has done quite a number of studies to assess transplacental effects of toxic materials.

You can either come up here or sit where you are.

DR. MANSON: I think I can probably sit right here. Well, I want to start off by saying that the work I have done involves laboratory animal research, and not human research. And as Dr. Infante has indicated, the concern over reproductive hazards with occupational exposure is a relatively recent one. I think there is a considerably longer period of

time in which people have been more concerned about, say, carcinogenic effects of occupational exposure than they have reproductive effects.

And therefore, the science to elucidate carcinogenic effects and to measure carcinogenic effects, I think, is considerably better developed than is the science to elucidate and detect reproductive hazards. So the situation that both Peter and I are in from different ends of the spectrum (inaudible) myself as a a laboratory researcher, is that we are faced with what we consider to be an overwhelming human health issue, and without having our tools as sharp as we'd like.

So at this point, I think the issue is one of trying to develop more sensitive test methods to accurately identify those compounds that can cause the problem, and then to actually apply these methods to the human population. Now, as far as reproductive effects are concerned, I'm going to limit my comments essentially to laboratory animal studies to the field of study of reproductive effects. And I'm sure other speakers will get more into the social-political aspects of those issues.

Now, in the field of study that is most commonly applied to analysis of reproductive effects is teratology. And that's the study of birth defects. The term is derived from the Greek, which means monster. And this field of study really began in the early '60s to handle the terrible tragedies that were involved with Thalidomide. And it was at that time people started developing animal models, trying to mimic human disease states, human malformation syndromes.

So this whole field of study was one in which the actual mechanisms of occurrence of birth defects were studied, the initial advance, the progress

of the disease, and the incidence of children at birth that had birth defects. So this is how this field of study began, and we wanted to bring that point up because I feel that the occupational and environmental situation is one which is considerably more complex than simply elucidating birth defects.

I know both Peter and I have been active in the last several years in trying to educate researchers in government agencies in the understanding that birth defects is only one of a large spectrum of possible reproductive effects you can see in the human population. In fact, in the human population, adult infertility is probably considerably a more important endpoint than these birth defects. Birth defects are an important measure and the efforts to meaure them should certainly continue. But I think we may end up finding that within an occupational environmental exposure situation, that adult infertility measured as a low sperm count in men or abnormally shaped sperm in men, or measured as amenorrhea in women or early onset of menopause in women, is a very, very important influence.

Additionally, of course, there is the problem with effects on pregnant women who are exposed in the workplace. And the most likely outcome of exposure of a human woman who's pregnant is an early miscarriage. In humans, embryonic insult most commonly results in early miscarriage. It does not most commonly result in a birth defect. If you were to insult a population of 100 embryos -- a rule of thumb, these figures aren't accurate, I make them up -- you might expect 75 of those embryos to abort. And then you might expect another ten of the embryos to be stillborn. You might expect five percent of the embryos to be born with defects, and then

the remaining percentage should have some kind of a childhood disease.

So if we insult the human embryo, the most likely outcome is a miscarriage. And so that the science that we're involved in trying to develop right now is to be able to elucidate the miscarriages that occur naturally and spontaneously due to some inborn feedback from the individual, who knows. And that's where the development stage is we're working in right now.

And it's clear to both of us that a good many cases of miscarriage, a has been pointed out in one case, (inaudible) results from occupational (inaudible). Now, before I go on too long here, I want to say that reproduction, I think, societally, is considered to be a female concern. Women are the ones who get pregnant, women carry the fetus and they're the ones who nurture the child in the first few years.

Well, I think recently people are beginning to see that women aren't the only ones who are subject to reproductive hazard. In fact, there is a great deal of concern at the present time over male reproductive effects. A lot of adverse -- from what I can see -- social and political policy has resulted from the inordinate concern with the woman alone.

For example, in the case of carbon disulfide, a very toxic solvent used in the textile industry, in some industries, women are prohibited from exposure to carbon disulfide. They are either not hired or they're laid off. Because there are reports in literature showing that women exposed to the littlest -- three to nine -- parts per million have a lot of miscarriages and reproductive problems.

Now, there are also studies on male reproductive effect of carbon disulfide. They are usually at much higher exposure levels. So when the issue comes up, should women be allowed to be exposed to carbon disulfide, everyone points to the literature and says, well, the current present standard is 25 per million, and we know that you see effects in women as low as three parts per million, so therefore we will not permit exposure.

Well, in fact, comparable studies have never been done on the male. The lowest exposure level that's been studied for male reproductive effects is 40 parts per million. So we're faced with an imbalance in information which I think is adversely influencing the social-political situation. So there are many people who feel that there needs to be a real catchup on the information of potential adverse male reproductive effects. So there's this very intense epidemiologic as well as laboratory level research being conducted on this issue.

So I know the following speakers want to take this up in more detail. So with that, I'll leave off, and I'll be glad to take any questions.

DR. INFANTE: Okay, thank you very much, Dr. Manson. The next speaker now will be Dr. Robert Scala, the director of toxicology, corporate medical department at Exxon. Doctor?

DR. SCALA: Thank you. I will be very brief. I'm going to try to outline some general considerations which our organization might have in mind in guiding a program for the evaluation of reproductive risks.

I'll be speaking from the perspective of one who has day-to-day responsibility for product safety evaluation. The first major consideration, we must recognize that chemical and physical agents can produce

reproductive effects in males and females. It's been said already by the first two speakers, and we want to reaffirm that.

These effects cover a spectrum of responses, infertility, miscarriage, embryo toxicity, birth defects, genetic changes, delayed onset phenomenon - the child is three years old before you realize something is wrong. Resources exist to evaluate in animal systems the potential for such effects. It's a new science, as pointed out by the previous speaker, it's in some peoples' minds a bucket and shovel science. We aren't very precise yet. We're still learning how to do these kinds of experiments.

The number and the quality of the resources varies, the number of centers in the United States where you can receive proper training in doing this kind of work is varied. When we set about -- and in a few moments I'll tell you about some of our own experiences, but when we set out to do a specific experiment, we could find only one laboratory that we had contract with that had ever done that specific experiment before, of which we were aware.

The next point under this recognition phase is that exposure of the fetus to us is of special concern. First of all, a fetus may be suspectible to external agents at doses below those which may affect the adult. Secondly, the period of greatest vulnerability of the fetus may very well be during the earliest developmental stage, before the female is even aware that she is pregnant.

So we're looking at three populations we want to protect, the male, the female and the fetus. But we're particularly concerned about the fetus because that's a little bit more difficult to get at, the susceptibilities

are less well understood by our lights.

The next thing we must acknowledge is that industry has an obligation to concern itself with these issues, upfront. We have an obligation to be concerned about those things, and we recognize it and accept it. We also recognize that scientific uncertainties exist. The isues and the science are still evolving, and no one will define in a precise manner exactly what one must do and still be able to get away with it. Secretary Marshall said this morning in another context, we don't have all the answers yet, that's why we need dialogue. We feel very much the same way about this field.

There are no concrete protocols. There are no concrete experiments which are generally accepted. There are no -- even the criteria for interpreting the data -- data evaluation is very much a difficult problem. What weight to give what specific responses. Again, confining my comments strictly to animal experimentation.

We must recognize that in the workplace, as well as in the general environment, the goal must be to avoid unacceptable levels of risk. And these -- the definition of acceptable levels of risk is a public policy issue to which the scientist contributes but brings no special gifts. We scientific people provide the data, but the definition of acceptable level of risk is something which is, as was said in another context, too important to leave just to the scientists alone.

Now, what are some of the steps which a responsible company might take to discharge these responsibilities? First of all, to identify and control risks, that is, by reviewing its operations, the associated biological, chemical and physical exposures in light of the best available data to

identify potential risks. Second, to inform employees of potential hazards and to educate them in the use of personal protective devices, safe work practices and accompanied by appropriate engineering controls to minimize risk.

Third, to specify precautions in the handling, use, transport and disposal of these agents. The next step which a responsible company might want to take is to seek new knowledge in the field, and to communicate this new knowledge to employees, customers, and the scientific community, government agencies and the public. The seeking out of new knowledge means you simply don't sit there and wring your hands and say well, we just don't know. You go out and aggressively find out.

The next thing that a responsible company might want to do is cooperate with the appropriate agencies in the development and implementation of standards. And where no standards exist, promulgate internal standards based on the best available science. I strongly subscribe to what has been said in a few places here but not by everyone, that is, the adversarial approach gets you nowhere. Scientifically, I find it a losing proposition. I personally, as a working scientist, do far better when I can communicate as a colleague with my opposite number in government or in academia, and not by table-pounding or any of the other things which in my mind characterize the adversarial process.

If the risk is not controlled, with all that's been done, if the risk is not controllable, you're ready to take the appropriate action. What's the appropriate action? Stop making the stuff. Stop selling the stuff. Recognize that all is not yet known, be prepared to take steps in the light

of new knowledge.

Let me conclude briefly with a case history. Several years ago we began doing experimental studies in animals to evaluate the reproductive risks associated with materials of importance to us. These studies involved both the male and the females, and included attempts to determine effects on fetuses.

When we began to generate some of these data, management's first question was, my God, do we have a problem? Are there problems in our operation? We couldn't answer that question because we didn't know, really, as toxicologists, all the things that our people were exposed to. I had no master list of every chemical that's used in our organization.

So we decided to go about the problem in the other direction. We sat down with a NIOSH subfile that was a computer printout from the registry of the toxic effects of chemical substances. And that subfile was keyed to teratogenic effects. And as one major category of reproductive risk, there are some 15 -- well, we ended up with more than 1,700 compounds because we got some later tapes.

We then took that list and sent it to our medical departments worldwide. The industrial hygienists, these are men in the plants who have -- who probably have the best idea of what workers may actually be exposed to. And we did a rotten trick. We sent them 1,700 compounds and said make a mark against any one of these that's used in your plant. So we came back with some 50 hits. That is, of the 1,700 compounds on that list, 50 or 55 of them we were using, or had potential use of, in our operations.

Then, because, as someone else said today, to be a good reporter one

must be very suspicious and not take anybody's word for anything, you'll forgive me if I say I did not take NIOSH's word for it. So we went back and examined the literature which NIOSH cited to qualify a particular material for inclusion on the list. And we found that even NIOSH can make mistakes, and they identified materials as teratogenic agents for which there was no animal data. By animal data, we said published in the readily-availble English language literature in the last 20 years. When that failed, we went to any language, anytime.

We've had a continuing dialogue with NIOSH, by trying to get some of these uncertainties shaken out. And we've come down to a list of 27 compounds which we then sat down with our medical people, prioritized them, and we're going through each of these 27 from the point of view of what is the quality of the data which is available on each of these materials. Particularly what are the dose-response relationships relative to any occupational exposure limit which may exist.

If there is an occupational exposure limit, and it looks like the effect level in an animal system is sufficiently above an occupational exposure limit, then that for the present is not a priority issue for us. The occupational exposure limit, the TLV, will provide the kind of protection we need. If there is no occupational exposure limit, though we've been working with an internal standard, (inaudible):

You can see that when you come up with a series of hits, one ends up with a great branching structure of decisions to be made, where there are materials -- we're just at that point now in our evaluation, where there are materials for which there are no good data, and yet we believe we may

have an exposure in our operations, these obviously become priority candidates for actual experimental work.

And finally, where there is no data or no information of any sort, we have to make measurements in our plants to see if anybody is even exposed to these materials. And if there is no exposure to them, then they fall lower on the priority list.

That's sort of where we stand actually as of today, reporting out the first five compounds in this group of about 27, this week.

DR: INFANTE: Okay, thank you very much, Dr. Scala. Would those of you standing in the back like to come up here and sit down, because we're going to be going for another hour yet. (Recording interrupted.)

MS. SEMINARIO: Both Peter and Jeanne have given somewhat of an overview, a quick overview, of the science of reproduction and reproductive health, going over the methods that have been used for detecting areas, reproductive effects and a general summary of some of the results, showing that in fact there are reproductive health problems, which can result from exposure to occupational agents.

Before I begin my comments, which are in a little different vein, I would like to again stress the point that's been made by the first three speakers. And that is there are essentially two things that we should take away from the discussion today with regard to reproductive health problems associated with occupational exposure.

Number one is that the information that we have on hand, and that is, the data base, the science behind reproductive health hazards, is very limited. The number of substances which have been evaluated are very

small, and that the test methods that we have at the present time are somewhat crude.

Nonetheless, point number two, however, under developed test methods are, the information that we do have at hand makes it very, very clear that when we're talking about reproductive health, we are talking about, in fact, problems that are faced by both men and women workers.

Now, keeping these two points in mind, I'd like to move on and look at another area in this whole problem, and that has to do with the political, the legal and the regulatory issues related to reproductive health. In particular, I'd like to focus on the actions -- the responses that I've seen and many other labor people and the general public has seen, responses of major corporations in this country to information regarding reproductive health problems.

As Peter and Jeanne have both discussed in a limited fashion, in the last two years, three to five years, we have seen corporations responding to data showing reproductive health problems, with the implementation of exclusionary employment policies. In my view, and in the view of many other labor representatives, these policies have been both selective and arbitrary, selective because only one sex, women, have been targeted, and arbitrary because the policies have focused only the potential adverse effects to the fetus, and really don't consider the other possible adverse effects on men or women, reproductive health functions of men and women.

We've seen policies implemented or proposed to be implemented by a number of corporations, as I've said. These include American Cyanamid, Monsanto, Allied Chemical, Olin, GM, NL Industries, ASARCO and others.

These policies have been implemented with regard to exposure to lead, fluorides, vinyl chloride, acrylomide, methyl mercury, radiation and others.

Basically, these policies prohibit women of childbearing potential from working in jobs where there is exposure to these substances I mentioned above and others, with the understanding or the claim, the concern raised, that these substances pose a potential health problem to the unborn child or the fetus.

In these particular cases where these policies are proposed or implemented by the companies, women working in these particular jobs where there is exposure to these substances, find themselves in a very difficult position. Essentially, they are forced to either have themselves sterilized so they are no longer of childbearing potential, or they are forced to lose their jobs or transfer to other jobs within the plant which are often lower-paying.

Again, we've seen this particular decision faced by a number -- in a number of different workplaces by a number of women. We've see it at the Bunker Hill smelter in Kellogg, Idaho, where a number of women to keep their jobs had themselves sterilized.

We saw it in a very graphic way, in a very publicized way, in American Cyanamid plant in Willow Island, West Virginia, where five women working in that plant had themselves sterilized in order to keep their jobs. We have seen it in plants where women are employed in the Allied Chemical Corporation.

I've heard of numerous cases where women walk into a plant and find

a notice pinned on the bulletin board, where the management -- the company medical department is reporting that they have on the basis of available scientific evidence, determined that the substances that they're exposed to in their particular job pose a health risk to -- a potential health risk to the unborn child, and for that woman to continue working in that particular job may, in fact, pose some kind of a risk to her unborn children.

Many of these people are working mothers, supporting solely a family or adding income to a family. They're often working in areas where there is no other real gainful employment, that is that their employer, such as in Kellogg, Idaho or Willow Island, West Virginia, represents the major employer in the area. That woman has got basically a fairly good-paying job working in that industry, and again, is forced with that decision: Should she have herself sterilized or lose her job or take a lower-paying job? The unions that have been faced with these particular problems, because in many cases it's been our membership that have been the ones on the line. Never have unions been involved -- the Oil, Chemical and Atomic Workers; Steelworkers; the International Chemical Workers Union, United Rubberworkers; and the UAW.

All of these unions have taken the position that these exclusionary practices are an unacceptable method for protecting the health and safety of these workers. And that in many cases, and in most cases, it is really nothing more than sex discrimination. We feel that these actions are essentially contarary to the mandate of the Health and Safety Act, which basically states that the workplace has got to be made safe for all working

men and women, and that none of these workers shall have to suffer any loss of functional capacity or suffer material impairment from working in that particular job.

And I would submit that because of hazards faced on the job in losing one's reproductive function, is something that is, in fact, covered by the Occupational Safety and Health Act. Moving to another area and to another law, we think that these kind of policies are essentially contrary to Title VII in the Civil Rights Act, which prohibits sex discrimination.

And Wendy Williams, the last speaker on our panel will speak to these issues in a little greater detail. Largely, I think that the sex discrimination comes from the fact that, again, many of these cases, in implementing these policies, that employers and corporations have failed to consider the hazards to male reproduction. And they are essentially treating women differently than they are treating men in this particular situation.

We have evidence on lead showing reproductive effects on the male, we have evidence on vinyl chloride showing increased risk of spontaneous abortion among women, the wives of male VC production workers. There is evidence around on the reproductive effects to the men for those chemicals for which women and not men are being excluded.

One of the reasons that we are suspicious of some of the motives and motivations that are raised by the industry people with regard to these policies, claiming that they are essentially protective policies, is the arbitrariness with which we have seen these policies implemented. We've only seen the policies implemented in nontraditional jobs. We have yet to see the kind of exclusionary policies practiced where the majority of the

work force is women, where women are exposed to reproductive health hazards.

If you look at operating room personnel, where we know that anesthetic gases pose a reproductive health problem to both men and women in those jobs, there has been no attempt to remove nurse anesthetists, women, form these particular jobs. So we really haven't seen policies implemented where there will be a severe economic impact on the industry for doing so. And I've got a couple of examples and case studies that I would like to share with you, that I think really represent and show this arbitrary nature.

In a particular Monsanto plant, they produce a -- it's a chloro alkaline plant, and there's exposure to methyl mercury there. Based on the available data showing that there is a teratagenic effect, the company decided to prohibit women from these particular jobs, working in the chloro alkaline plant. There weren't many women involved. There were a couple of maintenance workers and there were a couple of production workers.

In that same plant, the company manufactures penta-chlorophenol and ortho-chlorophenol, and for any of you who are familiar with the situation with dioxin, this kind of exposure to dioxin in this plant should immediately raise a red flag that that, too, would pose a reproductive risk. We've seen in the case of widespread dioxin exposure in Sebago, where there was an explosion in a plant there, with widespread occupational community exposure to dioxin.

We know that that is a documented reproductive health hazard. There are many women who are employed in those jobs in that plant, producing

penta-chlorophenol, exposed to dioxin. That company has refused to admit that the dioxin poses a reproductive risk, and has not implemented an exclusionary policy or those practices in that particular operation of the plant. However, they are keeping women out of the methyl mercury operations in the chloro alkalide plant, where there is exposure to methyl mercury, but where very few women are involved.

We have seen again an arbitrary policy implemented and then reversed with the Allied Chemical Corporation. Women who are involved in a job which was packaging refrigerants, a fluorocarbon substance, for basically the repair of refrigeration units. There were five women who were employed in those jobs, those five were basically faced with the choice of removal or sterilization. Two women chose to have themselves sterilized.

Well, on the basis of some additional data, that came to light later on during the year, the company said, wait a minute, we've really changed our minds, this does not represent the hazard to these women, and therefore the women can go back to those particular jobs. Well, again, two of these women had gone out and had themselves sterilized to keep their jobs.

In the interim, between the implementation of that initial policy and the women having themselves sterilized, and the reversal of that decision and that policy, the union involved here, the International Chemical Workers Union, had gone and filed charged with the EEOC, they had filed charges with the Office of Federal Contracts Compliance, they had called in OSHA, and basically were putting the company to task for implementing this policy. The company decided that it was really too much of a hassle to implement this policy and continue in this fashion, and so overturned the decision.

But as I said, in the interim, these women were faced with the problems and the feat of actually having themselves sterilized. And we have seen again this flip-flop in a number of other situations -- the policy implemented, women sterilized, and then company saying, there is no hazard there.

I just want to take a couple more minutes here, since everyone else has been so good about keeping their time short, just to state what the union's position is on this particular matter. In a number of these companies, we have tried to negotiate policies which would cover this particular situation and cover the reproductive health problems faced on the job.

One, we have called for employers to show in the first instance that they are in compliance with all federal health and safety laws, that being the specific OSHA standard and the general duty requirement to provide a safe and healthful place of work. We feel it's really ridiculous for an employer to try to implement an exclusionary policy when that employer is not even meeting the basic requirement of the law set forth in occupational health standards.

We think that employers should be required to show that he or she ha reputable scientific evidence regarding the effects on both sexes. We think that the employer should be able to show that the toxic substance poses a hazard that is significantly greater for the sex affected and the sex they're trying to exclude by the policy, and if that does pose a greater hazard to the fetus.

If a policy is to be implemented, that group shall be as narrowly

tailored as possible to the -- given the type of hazard that is posed. That employer should be able to prove and should prove that there is no alternative -- feasible alternative means of protecting the excluded group by removal of the chemical at hand, substitution with a safer chemical, the implementation of engineering controls.

In those cases where that employer can go through all those steps and prove that he or she has in fact complied and met those obligations, where one sex must be removed, be it men or women, we believe very strongly that that person should be transferred to another job with no loss of earnings, seniority or other benefits, and that it should not be the individual worker who should be the one who is made to suffer and to pay for basically a problem with a chemical and not with a worker.

One last comment there, and then I'll let Wendy get up here and open up for questions. We have been trying to do some work, again, through the unions with individual companies, we have also -- the unions, a number of public interest law groups, women's groups, environmental groups, have formed a coalition to basically consider the reproductive health problems on the job and to do political and educational work around these issues.

A coalition has been formed, it's called the coalition for the reproductive rights of workers. I have left the statement of purpose of the coalition on the back table with the names of individuals who you can contact for more information about that coalition. We have been trying to work with the government to get the government to move to implement a uniform federal policy which we would hope would adopt much of the policy that we are trying to negotiate on an individual basis with companies.

We're getting a mixed response right now. The most recent response from EEOC is that the problem isn't big enough for really jumping the gun and maybe we should wait a little while. Well, I think we've really got a chance to nip this one in the bud, and rather than see this kind of policy implemented on a broad scale, that we should deal with it as it comes up and as -- at the inception stages.

And so while we are getting this response from the government -- "let's wait" -- we're getting a very, very different reading from our membership. I was at a meeting last week of the Steelworkers, of women in the industrial setting workshop. Two hundred people in the audience, I would say 90 percent of those people were men. And contrary to the claims right now of possibly the EEOC that reproductive health isn't a big issue, and sex discrimination isn't a big issue, that was on every individual's mind in that room, men and women alike.

And the men that were there were very, very concerned about the women being removed from jobs. They were equally, if not more, concerned about having to stay in those jobs themselves, and were raising all the issues that have been raised here today.

So I would submit that rather than saying it's a problem that really isn't a big problem, that the kind of feeling that I'm getting from our membership is the contrary. And if you listen to the people at lunch today, my sense is that those are the people that really know where it's at. And if you do listen to the people that work in the plants, they would tell you, and I would believe them, that reproductive health is a very major problem, and if we don't address it now, it's going to get much worse.

Thank you.

(Applause)

DR. INFANTE: Thank you very much, Peggy. The last speaker on our cvmj/ gl ugll fjm?e fg/liams, assistant professor of law at Georgetown :niversity.

MS. WILLIAMS: In the interest of full disclosure, I should say I'm also a member of CRROW, the Coalition of the Reproductive Rights of Workers, to which Peggy Seminario referred.

I was struck, as Dr. Scala was speaking, with the description of the kind of effort that his company is undertaking. Because what he said, and maybe I misunderstood him, was that they had gone down a list of teratogens, that is to say, substances that can affect fetuses directly, in order to determine some kind of company policy, which as yet, I take it is not specified. And the reason I was struck by that is because that's exactly the kind of problem that gives rise to the kinds of exclusion that Peggy Seminario was talking about.

The reason for that is very simple. As Peter Infante suggested, and as Dr. Manson suggested, very often the substances that affect fetuses have other effects as well. And I'm not just talking about cancer, I'm not just talking about other general systemic health effects, I'm talking about reproductive effects, including genetic effects.

Now, I remember an example, one company that excluded women from the workplace on the ground that the substances to which they were exposed had a genetic effect. And it was that same kind of flashing light in my head. You know, genetic effects appear to both men and women. And genetic

effects are what go into the gene pool, presumably, and get perpetuated from here on out.

Genetic effects, more than purely teratogenic effects, are the effects with which we need to be most deeply concerned if we're concerned about future generations. I didn't hear -- maybe it was that my inability to concentrate -- I didn't hear Dr. Scala say that his company was looking at mutagens, the very things that affect both men and women.

And I think the other thing which you may have picked up from Peter Infante is that many, many substances which are teratogens, that is to say, affect the fetus through the woman, are also mutagens, and can affect the fetus through both the man and the woman worker. All right, so suffice it to say that most substances don't seem to discriminate between men and women. The problem is that many companies do.

The history is a very old one. Clear back in 1908 the United States Supreme Court decided a case called Muller v. Oregon, which upheld the protective laws for women. It upheld them on the basis of their inferiority in a number of respects, including their inability to stand on their feet for a long time. But the central idea conveyed by that opinion was that the state had an interest in the well-being of future generations, and that interest in the well-being of future generations can be a justification for treating women differently than men. Since 1908, that concept doesn't seem to have really changed much. Since women have the babies, women have got to be the problem.

And the solution to the problems of workplace exposure to reproductive hazard is to get rid of women, rather than to get rid of the problem

which might affect both genders. What I want to talk about briefly here is the law. How does the law enter into this problem that's been described today?

Well, let me say first that the agencies have been agog over this problem, awash, if you will, in conflicts, concerns and worries. OSHA has been having problems for the very obvious reason that the information available is not terribly good. And when it is available, it tends to be available on, for example, teratogenic effects, effects that solely affect the fetus through women, and not on the effects on males, which can turn out to be substantial.

So it's a scientific problem there, again, I think, stemming back to the old problem that since women have the babies, they're the ones who seem to get studied. OSHA nonetheless has taken an important first step, I think, in its enforcement of the law in trying to deal with the problem of reproductive health hazards to workers. That step appeared in a recent standard issued by OSHA, and I'm speaking now of the lead standard, under challenge in the D.C. Circuit at this very moment.

In the lead standard, one of the things, of many, that OSHA attempted to do was to address the problem of reproductive health in the following way. They acknowledged, at least for the moment, that it wasn't feasible to make the workplace reproductively safe. And for that reason created an alternative procedure in order to insure that persons who want to parent and who are exposed to lead can try and reduce the hazard during that period in which they are trying to become parents.

The procedure is something called medical removal protection, and

medical removal protection is a procedure whereby the man or woman is temporarily removed from the lead exposure job until the parenting occurs or 18 months goes by, whichever happens first. An important adjunct to the medical removal protection is rate retention. That is to say, no dimunition in the pay that the worker receives during that time. The reason that's important should be obvious, namely, that no worker in his or her right mind is going to want to suffer the risk of lower income, in order to parent. That's kind of a pie in the sky problem, this maybe I'll be affected, maybe I won't. Whereas that people rely on their daily, weekly, monthly income, so in order to make the program a success, some kind of wage protection is an essential componeht.

The court has not addressed the question, but it will very soon, whether OSHA has the power to do what it did with medical removal protection and rate retention, with regard to reproductive health hazards.

All right, so that's OSHA's first effort, and it remains to be seen whether it's going to be a successful one. What about the Equal Employment Opportunity Commission and the Labor Department insofar as it has the responsibility for enforcing the executive order, both the executive order and Title VII prohibiting, among other things, sex discrimination in the workplace.

Well, OSHA has been making a good-faith attempt to deal with this problem. The EEOC and the Labor Department so far haven't come forth with anything. I know that both agencies are sitting on a growing number of charges of discrimination and as yet, neither has come forth with any kind of policy, let alone an ordinary comprehensive policy, that's in accord

with both equal employment principals and takes into account OSHA health principles as well.

So at this point, we can say that the EEOC isn't doing anything. So far there have been no court cases, although the EEOC did file one that I think never got to trial a couple of years ago, and somebody went back to file one in Ohio. But as yet, no court cases. So we have the agencies in charge of equal employment enforcement sitting on charges at the moment.

What should they do? Well, I think I have the perfect solution to what they should do, at least in terms of the general framework for thinking about the problem. And maybe it won't surprise you to know that it's very much along the lines of what Peg Seminario has suggested, that the unions are interested in seeing.

Title VII prohibits sex discrimination. In 1976, the Supreme Court of the United States said when Title VII talks about sex discrimination it doesn't mean discrimination based on things like pregnancy, reproductive capacity. That's unique to women and therefore the Act doesn't really have much to say about it.

Congress immediately started rattling its chains and saying that's not what we meant at all, and got to work and passed an amendment to Title VII, in which what they did was define sex discrimination for the purpose of Title VII, as including reproductive discrimination against women. And on that basis, it's fair to say today that there is in the law a reason to believe that what many companies are engaging in when they exclude women on the basis of reproductive capacity, they're engaging in illegal sex discrimination under Title VII.

Now, one of the things that the agencies have been toying with is the notion that maybe there ought to be a defense, because after all, we are concerned about future generations, and women are the carriers, maybe somewho unlike in most situations where we have -- on its face -- sex discrimination, we ought to allow a defense here.

My answer to that is, no way should we allow employers under Title VII to exclude women as a group from the workplace. There are two reasons for that. First of all, I think we make a mockery of Title VII when we allow thousands and thousands of jobs to become unavailable to women based on their reproductive capacity.

We're beginning more and more to understand how many jobs we're talking about. We're talking about jobs in hospitals, we're talking about jobs in electrical plants, we're talking about exposure to radiation -- atomic work -- we're talking about airline flight attendants who ostensibly are more exposed to radiation and other hazards by being up in the air, and presumably women lawyers who have to fly around in planes a lot, maybe, fall into the category.

Amd maybe OSHA inspectors that are women that have to go in plants. And where does it end? It isn't satisfactory, under Title VII policy to permit exclusion to be allowed under Title VII. Nor is it appropriate as a matter of OSHA policy. I take it that the idea behind OSHA is that the workplace be made safe for people, and not that people be eliminated so that the workplace won't have to deal with the problem.

Given that basic assumption, what then, can the good-faith employer do in order to handle the problem or reproductive hazard? To me, the solution

to the problem is suggested by the OSHA approach, namely, a neutral policy which concerns itself with the reproductive hazrads to both men and women, in an even-handed way.

Now, it's standard Title VII law to say to an employer with a neutral policy he's not going to be in violation of Title VII. I have to add two caveats to that, however. One is that it is also a standard Title VII law to say that an employer can't adopt an apparently neutral policy and in the back of his or her mind be aimed at discriminating against a group protected by Title VII. So to the extent that policy is a pretext for getting women out of the workplace, it's not going to wash under the law.

The second caveat is this: Any time there's a neutral rule which has a disproportionate impact on a group protected by Title VII, for example, women or men, then there might also be a Title VII violation. At least an employer is going to be called upon to make a certain showing in order to maintain that neutral rule. What is the showing?

Well, the showing is that there is no alternative way with a lesser impact to carry out the employer interest in this policy, in this case, reproductive health. Bravo to employers who are concerned about reproductive health. Good. But show us that there's no way to go about carrying out this policy that has a lesser impact on, for example, women. What does that suggest? Well, that is something like MRP, medical removal protection, which is going to wash a lot better under the law than, for example, excluding fertile men and women from the job, for example, or putting them on lay-off or shuttling them off the jobs with lower pay.

Well, the upshot of all this is -- and the lesson, I hope, is that what an employer ought to be thinking about and what unions ought to be urging is the concept of a neutral approach to this problem. We don't want anymore to live in a world in which women are being protected by being excluded from jobs, and men are not protected from reproductive hazards by being kept there, not informed, and nothing being done about their reproductive capcity. It's time to end the discrimination that occurs against both men and women, and that is the policy which some of us at least, and CRROW in particular, is trying to get some agencies to adopt.

(Applause)

DR. INFANTE: Thank you very much, Wendy. We will now take questions from the floor.

MS. RANDALL: Dr. Scala, you stated that the fetus was the most senstitive. Do we really have data showing that the fetus is more sensitive than the sperm or the egg? And I ask this -- is it every 20 days, I think, there's a new supply of sperm an then the sperm has to go through reduction division, whereas a woman is born with all the eggs she'll ever have, but they, too, have to go through this process.

Now, do we really have any evidence that --

DR. SCALA: I think I qualified that by saying we think that the fetus may be the most susceptible. And that's just a general impression, not backed-up. The field is really very poorly studied.

I want, if I can take just a minute, to expand a little bit on this, I have to take small issue with --

MS. RANDALL: You can take big issue.

DR. SCALA: No, no, I take this small issue, because I'll define it as kind of selective listening. I'm concerned about males, females and fetuses. The experimental work I do is concerned with males, females and fetuses.

The only compilation of any magnitude of effects in this field happens to be teratogens. That's why I started. I don't believe that's the only problem. And when I mentioned that we do literature surveys, I didn't just look for teratogens. I'm looking for any effect on the reproductive system.

And finally, when I said we have an occupational exposure limit, I didn't say we had to limit sub-A for males and limit sub-B for females. We have one value for males and females worldwide. So I just want to get that small one in.

I cannot answer your question directly, I have no data. It's just my impression from reading the literature. I wish Dr. Manson were here, because she might be better able to answer that question.

MS. RANDALL: Because, really, if you're concerned about the fetus, you've got to be concerned about the egg and the sperm, and union thereof.

DR. SCALA: Yes, we are very much concerned about those. Our studies that we're doing now, the animal studies we do, are attempting to study the impact of chemicals on sperm maturation and reproductive function, oocyte maturation, the process of conception, implantation, gestation, that is, the actual union of egg and sperm, the implantation into the uterus, however, it be -- the analogous situation in the animal species. The ability of the animal to carry that fetus to term, we think, is one of the most crucial points.

Peter mentioned that -- no, I guess Dr. Manson mentioned that that's the response in humans, is fetal wastage. They just lose them. In animals, it's a different sort of thing.

MS. RANDALL: They reabsorb, don't they? The embryos reabsorb.

DR. SCALA: Yeah, the embryos reabsorb, yeah.

MR. (UNIDENFIED): What are teratogens?

DR. SCALA: Teratogens are compounds which cause deformities, monsters, birth defects. The classic is the --

MR. (UNIDENTIED): Thalidomide.

DR. SCALA: --the Thalidomide, right.

MS. RANDALL: The other thing is, is there really any scientific evidence that teratogenesis is exclusively associated with the femal reproductive process? Why -- theoretically, why could that not be sperm-determined, instead of egg-determined?

DR SCALA: Well, in general, what they think is happening is that once the fetus has been formed, the chemical or some metabolic product is acting directly on the enzyme systems in the developing fetus, and it is causing the defect to occur. That is, it's inhibiting something or speeding up something. It's somehow or other changing the clock that runs the development of the fetus.

That's not to say that there could not be an effect on the sperm which would damage the genes that that sperm is carrying, which would then result in a genetically altered fetus, which would be expressed as a deformed fetus. So, you see, you can have a teratogenic response as a consequence of a mutagenic agent in the male.

So, yeah, it's all part -- it supports your premise that you really have to protect workers. Once in a while it may be -- I'll shut up.

DR INFANTE: Okay, I'd like to also respond to that question, and there are a lot of you that have questions. We'll get to all of you. We have at least a half an hour left.

But your question, is the fetus always more susceptible, I don't think you can use the general rule of thumb to say the fetus always is more susceptible. I think that it's very obvious that much more work needs to be done in this area. Transplacental toxicology is rather crude in terms of the toxicology that we know in terms of carcinogenesis.

Now, in terms of carcinogens; there are some cases where the fetus is more susceptible than the adult. There are some cases where the adult is more susceptible than the fetus, as suggested from experimental studies. So I think you have to look at one agent at a time and you can't be using any rule of thumb.

And I think probably vinyl chloride would serve as a good example, where in fact there have been studies for birth defects in experimental animals, effectively three species, which have been negative for birth defects, for embryo lethality. There's only one study, by Maltoni, indicating transplacental induction of tumors from pregnant rats exposed to extremely high levels. However at much lower levels to adult animals you have a much higher tumor incidence.

And so I think it depends on the type of carcinogen that you're talking about, those carcinogens that are metabolism-dependent would be -- the risk would be greater to the adult than to the fetus. So, now, if we

could -- Dr. Ashford, you had your hand up.

DR. ASHFORD: This audience may be interested that there was a not very widely publicized conference in Boston in May on teratogens and mutagens, in which some very good data has come out. And I was asked among others to prepare a paper.

And I made a startling discovery to myself, when I prepared the paper. The discovery was the following, that in fact, Dr. Scala, we do have -- we do have a test for mutagens, although we've not -- it's been in front of us and we've not recognized it.

OSHA has been consumed with the carcinogenic effect of chemicals, and in the process, in the proposed generic standard, has indicated that the Bruce Ames test, which is a mutagenicity test, might be used as one criterion for carcinogenicity. And there's been howling and screaming about whether or not that's good extrapolation. But right in front of our eyes is the fact that people argue much less violently, are in much more agreement that mutation is likely to be transferable among species and bacterial systems to other systems. Not completely valid, but certainly much more likely to be correct as transferable than, let's say, the carcinogenic experience.

And here we have a test which will give us an indication of the mutagenic potential of chemicals. We know what those chemicals are, they've been tested as mutagens. It's an easy test in apply. It depends on how much religion you've got as to whether or not you want to base policy on it.

The Department of Labor has not yet taken an aggressive stand to

operate and define what a mutagen is. Under the Resource Recovery and Conservation Act, EPA is supposed to define what are mutagens, teratogens and carcinogens. It has not done so. But we may be very, very close to defining for policy purposes what a human mutagenic risk is, and then what are we going to do?

DR. INFANTE: Okay, I agree with your position. In fact, I think there has been a tremendous amount of emphasis on mutagenicity tests for predicting carcinogenesis, and not enough emphasis on mutagenicity tests for their indication of transmissible gene damage. And I think this is where we need to have the genetic toxicologists come forward and to see if they can come up with, say, a battery of mutagenicity tests which would -- from which we could presume mutagenic risk, because I think to try to determine this on a population basis would be virtually impossible, or tremendously insensitive, to most situations.

Now, -- yes, sir.

MR. (UNIDENTIFIED): I'd like to make an observation, ask a question, and then make a statement.

The observation being that in my experience and to my knowledge, there is no disharmony in nature, no disharmony, that all nature is affected to one extent or another by things which are destructive to one. And from that, I wonder, has -- is there anyone here who knows whether there has been any studies done on the Thalidomide effect on males?

We know what havoc it's wreaked on the female, and the offspring. Anybody know anything about Thalidomide with men? I just cannot presume that it wouldn't have some untoward effect. I just can't imagine that.

DR. SCALA: Is your question, does Thalidomide produce an effect in sexual function or reproductive function in males?

MR. (UNIDENTIFIED): Some effect on the repoductive --

DR. SCALA: I'm not aware of any publication of literature. There's also no suggestion in literature that Thalidomide has any effect on reproductive function in the female. What Thalidomide does is, at a very crucial window in the development of the fetus, it causes the failure of -- at one point in time, failure of limbs to form. At a different point in time, if the drug is given at a later point in the developmental cycle, it causes other kinds of deformities.

But I'm not aware -- which is not to say that it may not exist -- but I'm not aware in the literature of a publication which stipulates that Thalidomide affects male reproductive performance or female reproductive performance. It appears to be, at the doses that have been tested, affecting the fetus.

MR. (UNIDENTIFIED): Thank you. My final comments are, this particular presentation which you are chairing has really electrified me today, because you started out on a very scientific approach to this, and then you turn it over to Dr. Manson, who is a very dynamic young person, and then I guess we went to Dr. Scala, who electrified me by admitting that management has large responsibilities towards us.

I quit taking notes, because I was missing what you were saying. And I still haven't gotten back to taking notes. This is one of the first times that's happened. And, of course, Miss Seminario gets up, and she proceeds to spellbind me, too, as did Miss Williams. I've never seen such

a dynamic panel before, and I think we ought to give them a real great round, because, I tell you, I've fallen madly in love with all of you.

(Applause)

DR. INFANTE: You're putting us under a lot of pressure.

(Laughter)

Yes.

MS. (UNIDENTIFIED): I'm beginning to wonder --

DR. INFANTE: Would people please state their names? I'm not sure if this session is being recorded or not. So when you ask the question, please state your name.

MS. KAIGHIN: Okay, Abby Kaighin. I'm beginning to wonder if we're not headed toward equal employment opportunity hazard exposure or something.

On this lead example that somebody gave earlier, was there testing evidence that men as well as women were vulnerable on the medical removal? What do you do if you have a case where -- since there seem to have been more studies done on the effect on offspring than on males, what do you do if you've got the data for the female and the offspring, and you don't have it on the males?

MS. WILLIAMS: Yes, which we've already said is not an unlikely eventuality.

MS. KAIGHIN: Right.

MS. WILLIAMS: Given the nature of the studies and the focus. Well, that is the hard question, that is the hard question in the whole area. And different people have different views on it.

My own view is that, given the nature of the data, we have to go to something like temporary removal, rather than exclusion of women. It just won't do on the --

MS. KAIGHIN: Yeah, how do you -- what grounds or what basis -- you don't have any scientific reason, any statistical reason to eliminate the other party.

MS. WILLIAMS: What other party?

MS. KAIGHIN: The male party, depending on who the data has been worked up on.

MS. WILLIAMS: Look at what's happening. At the point at which employers have to begin to justify what they're doing by coming forward and saying, look, I have evidence here, I've looked at the evidence here, and I've looked at the evidence with respect to women and the evidence with respect to men. And that will finally justify a policy.

Then somebody is going to start producing the data that's needed. And in the interim period, we have all been exposed, all of us, to various hazards along the line. And all of us have an equal right to, I suppose, take the negative risk that's involved, and not have ourselves excluded from the workplace. We have a right to information, and we have to have the information so we can choose. But don't tell me I can't ... (break in tape).

MR. AMBERG: I'd like to make a comment on a couple of these points, if I may, from a union point of view, and also for a moment from a male chauvinist point of view.

DR. INFANTE: Would you state your name, please?

MR. AMBERG: My name is Matt Amberg and I work for the International Union of Electrical Radio and Machine Workers. I'd like to point out first of all, as a layman, that I have the same sort of feeling that the gentleman up front had, and that is that while this session happens to be on reproductive hazards, I have a feeling that any agent which is powerful enough to have an effect on any system of the body probably is going to have effects on other systems of the body. We found in the case of VC, for example, that although the big fuss was about a certain kind of cancer of the liver, that it also had effects on other parts of the body, and in some cases different diseases.

Now, with respect to these agents which have powerful effects on the -- and as yet little-understood effects -- on the reproductive system of human beings, they probably also have effects on other systems. So that, just as we can take the canary as an early warning signal for people, so we can use a hazard for any disease, in any part of the body, as a warning that perhaps there may be another effect.

The second comment I wanted to make is that while this session has brought out the one use of the medical removal in the lead standard, organized labor has been pushing for a -- what we call rate and job retention provision, in every standard. Whenever there is an OSHA standard which provides that people will be removed from a particular job because of too great an exposure, that those individuals have had to some particular hazard, whenever they are to be removed, we want the standards and have wanted the standards to provide that they keep employment, and that they retain at least the same job rating, regardless of whether it's lead or

some other hazard in being transferred to another place, another job, another situation within that employ.

And therefore, I think we would not be happy with some kind of a limitation on the medical removal protection provision, which would apply only in the case of proof that the male is equally affected. And then I'd like to say from the point of view of a male chauvinist pig, which I am, that these are our women, our wives, our daughters, that we have a concern for them, just as they have a concern for us.

And that the answer alway has to be in terms of bringing that job and the environment in that workplace to the point at which there is no hazard to a male or to a female, even if there is not a pile of bodies to testify that that particular hazard is there and that it is there with respect to a particular sex.

I don't think we have to look for proof perfect, even though there is evidence already of the fact that certain chemicals do affect both men and women. We don't have to look for that proof. There are women, there are brothers, if we are men, and in the case of the women, I'm sure they have the same feeling toward us.

So that the objective has to be the objective of the OSHA law, which I think was already enunciated here, that the obligation of the employer and the terms of a standard when it is adopted, are to be those conditions which permit a person to be exposed in that particular work situation through a lifetime of work, with no diminution of -- probably -- function or health.

And I think that's the point. I don't think that this business

of limiting the thing too much to one particular reproductive system should be relied on. On the other hand, I'm not denigrating the terrible importance for some of us as parents, as grandparents, of the problem of what happens to our kids because of the way people make a living.

MS. WILLIAMS: Maybe I could just observe on one point. In the Tead standard, medical removal protection is generally applicable. It's the first time, though, it has been specifically used with reference to a reproductive hazard for both men and women.

MR. AMBERG: It's the only standard we have with rate retention, unfortunately.

DR. INFANTE: I just want to say one thing in terms of your question about various organ systems or various types of reproductive hazards or manifestation of those. That was the point I was trying to make in my opening remarks that for the 20 substances that industry had forwarded their concern about in terms of transplacental effects, there are reports demonstrating that, that 70 percent of these substances were either carcinogenic, mutagenic or associated with adverse effects on male reproduction.

And this of course is not taking into account some of these substances that have never been tested for adverse effects on male reproduction or for carcinogenicity. So, in fact, it's biased toward an underestimate of the concordance. And I think one of the things that the various parties are concerned about is that we don't develop a bias in our data set from the beginning, and that we only study transplacental effects, and not study

effects through male exposure or carcinogenic or mutagenic effects.

Dr. Ashford.

DR. ASHFORD: The medical removal protection which is being tried with lead is supposed to be instituted when the engineering controls have gone as far as they can. But I caution you, the medical removal protection, all of the features that it has that we like, is a double-edge sword, because what it is is rotating workers into those jobs.

And if our standard isn't protective enough because we don't have the data to justify it, we may be producing more mutation and more birth defects by that rotation than if we never rotated the workers in the first place. It's a very problematic standard. I defend it for all the reasons that have been articulated here, but let's not be illusory about the problem. It can produce more cancer, it can produce more mutation, and it can produce more defects. If it's not a low standard that's accompanying the provision.

DR. INFANTE: Okay, thank you, Doctor. Are there other questions? Yes, Doctor.

MR. YOUNGSTROM: My name is Richard Youngstrom from IOE Local 201. And I had a question for, I think, Wendy Williams. It seems that a lot of the emphasis of this kind of work is on the fetus and women. I think the point was made that one reason for that is that women produce new workers.

But I wonder if you could comment on the other, that the fetus is not protected by workers, compensation law. And that this law effectively prohibits employees from suing their employers, that the fetus might be -- or the employer might be sued on behalf of the fetus. Would you comment?

MS. WILLIAMS: Yes, you're right, of course. The workers' compen-

sation laws do not cover fetuses who may be born with defects and choose to sue. They'll cover the -- workers' compensation will cover the reproductive problems of adult workers.

That means in essence that the limited liability which the employer has under the workers' compensation laws is not available. When a child as a victim sues, and the tort liability therefore is much -- potentially much greater, I have about six thoughts on that, two of which I think I'll convey. The first of those thoughts is that people have been aware, or at least, I've seen in the literature, since World War II, the awareness that exposures can harm -- exposures or certain kinds of jobs can harm fetuses, and we have not to date seen lawsuits or very few lawsuits in this area.

So that, as a practical matter, it doesn't appear that there is a great danger along these lines. The problem being proof, the tie-in, between the effect and the cause. Now, that's one way of saying, maybe it's not a big problem in practice, although it's a big problem in theory. But let's assume it's a big problem.

I don't doubt for one minute that if it really does turn out to be a big problem, that employers can use their clout to get a concept like workers' compensation applied in that area. I mean, the answer to worker injury was not that, my God, it's going to cost the employer a lot of money. It was to pass the workers' compensation laws, which guaranteed two things, one, certain -- fast and certain recovery to the employee, and lesser liability to the employer. That arrangement could obviously be extended, if need be.

I for one am not willing to sacrifice the job rights of the number of

women we're talking about in order to protect employers from what may, but probably will not, turn out to be a major source of liability.

DR. INFANTE: Yes, in the back, there.

MR. (UNIDENTIFIED): I'd like to briefly ask the panelists if they have any idea how many women have lost their jobs because of this kind of exclusion, say, per year or something like that.

MS. WILLIAMS: Well, that's very difficult to assess, because in a good many of the kind of jobs that we're talking about, women have always been excluded from those jobs. And the explanation given today is that there is reproductive harm possible. The explanation given in the old days was, we don't want women on the job.

This issue tends only to turn up in those jobs that have been traditionally higher-paid, male only jobs. In the jobs that are female-intensive and lower-paid, even though the exposure may be the same, in terms of reproductive hazards, the problem of exclusion hasn't cropped up.

So that, it's virtually impossible to calculate. We have a sense that we may be talking about thousands and thousands of jobs in terms of the problem. But we don't know how many jobs we're talking about in terms of that being the specific reason for exclusion. But -- I mean, American Cyanamid at Willow Island is a good example. Two years before they decided that women should be excluded, they had hired their first woman into those higher-paid jobs, in Willow Island.

So Title VII came along and they had to hire women. They hired their first seven women, they didn't hire any more women, and in two years time they came up with a solution to their problem, handling the women in there

by saying all women of childbearing age, which they defined, I think, as women up to age 50, have to go.

MS. SEMINARIO: Just a comment on that. We were asked by the EEOC to provide that same kind of information as a justification for them to go ahead with a formal policy or guidance on this particular issue. And in trying to do that assessment by contacting various unions that have had this problem, we came out against the very problem that you really can't quantify right now the numbers of people that are affected.

And when you say are affected, you're talking about a couple of things. You are talking about those women who are in those jobs now and are the ones that are on the line, facing the exclusion towards sterilization. So those are the people that have been hired and are in those jobs. As Wendy said, you're also talking about the many people that may at some time bid into those jobs, or bid on the job -- as a present employee wants to transfer into it as a promotion or basically just a new hire into a plant. And so you're talking aobut people who are now immediately impacted by policy, and those many thousands of women in these jobs who will never have a chance to work in those particular jobs.

You can begin to get some handle on the problem if you were to look at, theoretically, the number of lay jobs in this country, that women might never be able to work in. If in fact the kind of policies were seen which are introduced, I might add, by some of the leaders in occupational health in corporate America, and one would expect that those policies would be followed by people who have followed these corporations in other areas, that you may be talking in fact about hundreds of thousands, millions,

of jobs in this country where that issue could arise and that problem might arise.

But as far as the hard numbers on the women excluded right now, the women who have been forced to leave their jobs, the number of sterilizations, we don't really have hard numbers, and it's more of a case study approach, as I indicated earlier in my comments.

MR. (UNIDENTIFIED): There's a followup to that. Wendy, you had mentioned these were traditional high-paying jobs. I wonder if you could briefly categorize what those would be.

MS. WILLIAMS: Well, at American Cyanamid, I guess that's a one company town, they had jobs like janitor and stuff like that, which is where some -- the women who didn't get sterilized, transferred, which are much lower paid. But that the union high-paid line jobs, higher-paid jobs in the plant, production jobs, were male-only jobs.

And we have -- I mean, I can't give you one counter-example of that phenomenon. The production jobs, the higher paid jobs, the jobs that have traditionally been male, where because of Title VII, women began to become an issue, those were the jobs where the phenomenon has turned up and reached public consciousness, because women are going out and getting sterilized, and then it gets in the newspapers.

Something else -- I used to live in San Francisco, and down in the Peninsula, it's all the electrical workers are down there. And the very low-paid jobs there are predominantly filled by women, and those are jobs with, I think, lead exposure. But nobody's talking about excluding them. A beautician is a job which is very dangerous job from this point of view.

Dry cleaning, nobody's talking that exclusion there.

We're talking about the part of the pie that pays well.

MS. WEEGER: My name is Mary Jo Weeger (phonetic) from Local 65, United Steelworkers of America. I think another factor that has to be considered in counting the number of women who are excluded from these jobs are women who exclude themselves by means of -- they get into these jobs and perhaps they're experiencing miscarriages, and they realize that in order to have a child, that they have to move themselves from the job. And it's not a companywide policy, but they do it on their own.

I work in basic steel, and I know that that condition exists, where women are exposed to carbon monoxide or welding fumes and things like that, they're experiencing miscarriage after miscarriage. And although the company doesn't tell them, well, you can't work in these areas, they know that if they want to have a child, or the doctor will tell them, if you want to carry a child full-term, you have to leave your job. And that's one thing.

And I wanted to respond to something that was said earlier about rate retention in terms of removal from a dangerous job, earlier today Dr. Carnow was talking about 39 foundry workers who were found to have silicosis out of 70 who were tested. Well, that foundry was in my plant, and we were able to negotiate an agreement with the company, where the workers who had (inaudible) silicosis were able to be removed from their jobs with full rate retention.

So lead has not been the only area where that policy has been in effect. It can be negotiated in other areas.

MR. ( UNIDENTIFIED): Regarding this young lady from the steel mill, the people who had protected pay, what did they get in the way of indemnification for their illness?

MS. WEEGER: That hasn't been settled yet.

MR. (UNIDENTIFIED): Is it in the state of the allegation?

DR. INFANTE: I think it's after 3:30 now, and it's time for a coffee break. And then there will be a media workshop beginning at 4:00. So thank you for attending and thanks --

(End of proceedings as recorded.)

MEDIA WORKSHOP

Rachel Scott, Author
MUSCLE & BLOOD

Paul Brodeur, Author
EXPENDABLE AMERICANS,
THE NEW YORKER

Phil Lewis, Producer
ABC

Tom Curtis, Free-Lance Writer
Former Editor, HOUSTON CITY MAGAZINE

Michael Flannery
THE CHICAGO SUN-TIMES

Tom Horton
THE BALTIMORE SUN

MS. SCOTT: Good afternoon, I want to welcome you to our panel. This panel was originally conceived as a media workshop. And what we hope to do here today is to help those of you in the working media who are interested in pursuing questions in the field of occupational health and safety and to give you some ideas about where to go for information, sometimes just a question of how to get started. How do you deal with the difficult problems of deciding what is a story? When do you have a story? Where do you go for the kinds of scientific backup that you might need for a certain kind of story?

My name is Rachel Scott, and I originally became interested in this whole field in 1969 when I was a reporter at the Winston-Salem Journal. And I had no idea about what a workplace was like, other than newsroom. And I didn't think too much of that. But I had no idea what it was like in a factory, and my first experiences were extremely naive. I was interested in the problem of working in textile mills, and I didn't know where to start. And maybe there are some of you who are at that level, you work for a local newspaper, a local magazine, and you want to know where to start on a story.

And what I found was the best way to proceed was, when I didn't know where to start, was to just start knocking on doors. I went to the portion of town where the textile mill was located, which is called "Hanestown," and it was surrounded -- it was a series of company houses that had been surrounded by the rest of the city that had grown up around it. And I just knocked on doors, and I said, "Hello," and I introduced myself, and I said,

"Do you have trouble breathing?"

And then I went from there. The guy said "No but talk to the guy next door." I'd go next door and I'd talk to him. All the people in this neighborhood worked at Hanes. And I'd get people who would say "Yeah, yeah, I have a little asthma now and then." I talked to one man who said that and I said, "Well, how long have you had this asthma?" and he said, "Well, I guess since I was about 13." And I said, "Well, when did you start working at the mill?" And he said, "Well, when I was about 13."

And these kinds of stories, where you have to start from the very, very ground level, are extremely difficult to build up. But I found after I published my first couple of stories on that, I went back to this neighborhood, these same people who had never heard of brown lung disease or white lung disease, as it was called in earlier days, or who had never heard of byssinosis, were saying, "Oh, yeah, I read about it in the paper."

And that's why the media is so important, because these people are not going to hear it from the company doctor. I know that, because I've been out there and I've talked to them and that is not where they pick it up. Many times, the first time they know there's a problem is when they read about it in the local newspaper or when they see it on TV.

And so that's why we have the panel here today, that's why we hope that those of you in the audience will be able to pick up the ball and to go out and to go into areas that have not been explored, go into the areas where there are still problems. As long as there is a problem there -- even if it's been written about -- it is still news.

One of my biggest problems with editors is that I have never been able to understand -- one time I went to a magazine with a story I wanted to do on a mine disaster. And the editor told me, "Well, we already did a story on a mine disaster this year."

That same magazine does stories on scandals in politics day after day after day. And as long as there are people dying in factories, as long as there are working people dying, there is a story there. Each one of those deaths is a story. And I want to see that kind of consciousness.

We have an extremely distinguished panel with us today. We have people who are generalists and people who have gone at these kinds of stories from different perspectives and different angles. And I want to turn the mike over to each of them to speak briefly about some of their experiences and some of the ways they've handled the problems that come up, in trying to get into what is a very controversial and very difficult area to cover, from the outset.

First of all, we have Paul Brodeur, a man who inspired me when I was just starting out, and who wrote what I thought was the definitive piece on asbestos, called "Asbestos, the Magic Mineral," for the New Yorker. And little did I know he was going to go on then to write a definitive book on the subject.

So without any more introduction, Mr. Brodeur from the New Yorker magazine.

(Applause)

MR. BRODEUR: Thank you, Rachel. Ladies and gentlemen, when I arrived here this morning, I came in the middle of a seminar with Anthony Mazzocchi of the OCAW and Dr. Karrh from DuPont. After listening for a

while, I decided that I would change the title of my talk, which I had planned to call the politics of occupational disease. I thought I'd call it the semantics of occupational disease. And I decided to add the following subtitle: how an objective journalist learned a new vocabulary.

In March of 1968, I began research on the article that Rachel Scott has just referred to. It was called "The Magic Mineral," and it was the first long piece ever written about the biological effects of asbestos. In the course of travelling about the country and talking to government officials and doctors, I made my way to Cincinnati, where I sat for two or three hours one morning, talking to some officials in the old Bureau of Occupational Safety and Health.

I asked them about the problems of asbestos exposure, and they told me it could cause scarring of the lungs, a disease called asbestosis. But they did not believe that any link between asbestos and cancer had been proved, and certainly not the link between asbestos and mesothelioma. Mind you, this was in 1968, four years after the International Conference on the Biological Effects of Asbestos, which was held in New York. That conference was a grand jury indictment of asbestos as a potent cancer-producing agent.

No, the government officials with whom I talked in Cincinnati in March of 1968 did not believe that asbestos could cause cancer. I'll never forget when the leader of the group, a man named Lewis Crawley, turned to me, and seeking to assure me that there wasn't really a big problem about asbestos, he uttered a phrase that was my introduction to the semantics of asbestos disease.

"Just remember," he said, "you can get chest disease from digging in your garden."

Dr. Crawley's outfit--the old Bureau of Occupational Safety and Health --was the same outfit that failed to release the data that the government had collected on the exposure of asbestos workers all over the country. That, in turn, caused the Department of Health, Education, and Welfare to be named as a defendant in the Tyler suit. And HEW, as you may know, paid five million dollars in damages in that suit. Nobody in HEW talks about it much.

The second time I heard about the hazard of digging in your garden was in the spring of 1971, when I was doing a piece on the health hazards of proteolytic enzymes which were then being used in soap detergents. These enzymes ate up stains fast and American housewives loved them because they got the laundry clean.

The only trouble with them was that they had caused serious allergic reactions and chest disease among English workers who were engaged in the manufacture of enzyme soap detergents. This information had been published in the Lancet--the famous English medical journal--but few doctors in the United States had bothered to read it. One day I was visiting the medical director of one of the leading detergent manufacturers. We were talking about the problem of enzyme detergents. He didn't know that I knew that several of the workers in the factory had been carried out the night before with severe allergic reactions to the enzymes.

He said, "Just remember, you can get chest disease from digging in your garden."

I began to wonder at that point about the semantics of occupational disease. In 1971, when I was writing still another piece, I had a phone message from the director of research of a very large American corporation. He wanted to talk to me because he'd heard that I was writing about one of their products. When I returned his call, the switchboard operator out at the plant told me that Dr. so-and-so was on a conference call. She said she would put me on hold while she found out how long he would be tied up. I said okay. And at that point she plugged me--by mistake--into the conference call.

For the next half-hour, eyes wide open and ears the same, I listened to this man conspiring with the superintendents of factories all across the United States to circumvent state and federal regulations for the control of toxic substances. Preventive measures, he called it. That's something entirely different from preventive medicine. After I put down the receiver, I decided that I'd had enough of the semantics of occupational disease. I went to my editor and told him I wanted to write about the workings of the nationwide medical-industrial complex. The result was a five-part series in The New Yorker called "Causalties of the Workplace." It later appeared as the book, Expendable Americans.

Now I want to capsulize what I've learned over the past dozen years during which I've written four books and many articles about occupational and environmental health. I tell it to you for what it's worth. I speak particularly to my colleagues from the press. In these past 12 years, I have never been given a straight answer about industrial disease by anybody in industry. So I learned that industry always lies. I learned that

government officials, many of whom are influenced by industry, often fail to tell the truth. And I learned that the Congress, abysmally weakened by timidity and deceit, is being co-opted by industry money.

A crisis of occupational and environmental health is approaching us. Indeed, it is upon us at this very moment. When you have the Surgeon General of the United States sending a warning to 400,000 American physicians that there are 11 million American men and women who risk cancer from asbestos exposure alone, you've got an impending public health disaster of incredible proportions. Why pretend you don't?

What is the role of journalism here? What has it been in the past? Well, it has been rather sorry in many instances. Do you remember Time Magazine's review of Rachel Carson's book, Silent Spring? It referred to Miss Carson as an hysterical hyperbolist. A dozen years later, the EPA had banned DDT across the entire nation. Some hysteria. Some hyperbolist.

How should the press handle the occupational and environmental horror stories that are pouring out of the chemical industry these days? Well, the press should dig into the issues, do some investigative reporting, and come up with the kind of facts that will enable the public to make some intelligent judgments. All too often, however, the press is content to contrive an elegantly balanced mobile of assertion and denial. For example, some scientist says that a certain chemical is dangerous because it causes cancer and is being found in ground water supplies. So the news writer makes a proforma call to an industry spokesman, who says, "No, no, we've made our own studies on this chemical and we find that it is perfectly safe and that there is no evidence to suggest that it poses any health hazard

whatsoever. And there the issue is left. The public is then supposed to choose between the two versions. Like the parable of the lady or the tiger.

Well, that's not journalism. That's public relations. That's a cop-out. A journalist should follow the money trail. He must find out who's paying for the scientific study. When he finds out who's paid the money, he is on the way to knowing why the results are what they are.

A journalist must question everything when it comes to occupational and environmental health. Above all, he must ignore the neanderthal notion espoused by many people in industry who seek to pervert the Anglo-Saxon system of jurisprudence by urging journalists to extend the presumption of innocence to chemicals and other inanimate substances. That's not journalistic objectivity. That's boobery. Mencken's boobery revived.

In order to be an objective journalist, it is not necessary to leave one's brains, one's critical faculties, and one's sense of humanity and outrage at the breakfast table. One does not need to be afraid of speaking out. When I walked in here today, the doctor from DuPont was talking. I listened to him carefully as he praised the record of the chemical industry. It seemed to me that what he was saying was simply this: "We didn't do it, and we won't do it again."

The doctor from DuPont warned journalists to watch out for misinformation. He urged journalists to listen to industry's point of view in matters of the public health. Trust us, he was saying in effect. Was he talking about trusting the chemical industry that we all know and love? Was he talking, say, about Hooker Chemical--the people who gave us Love

Canal? Was he talking about the chemical industry that bears responsibility for the massive contamination of groundwater in America in the last 20 years?

Let me tell you that you should do a little homework on some of these chemical companies. You should look up their records. You especially ought to look up the records of some of their medical directors. Begin with the medical director of the Hooker Chemical Company.

During the past few months, newspapers such as the New York Times and the Boston Globe have suggested that one way to deal with corporations that break the law and endanger the lives of thousands of innocent people is to throw a few of their executives into jail. As it happens, I have been advocating that for many years. I hope I live to see it.

The asbestos industry, now becoming desperate, is seeking to introduce legislation in the Congress that would indemnify asbestos companies against criminal negligence lawsuits and third-party suits. Industry wants the federal treasury--you and me--to foot the bills for their past actions. They say they didn't know that asbestos would cause disease and that they are, therefore, not to blame. But the evidence is now overwhelming that the asbestos industry knew about the health hazards of asbestos as far back as 1934, and conspired to suppress information about asbestos disease from reaching the workers and the public.

I'm going to close by telling you that those of you who intend to write about occupational and environmental health problems should expect to be the target of attack. You may be called hyperbolists. Or sensationalists. Or even muckrakers. One company medical director once introduced

me to a meeting in that way. I told him very politely that if he would refrain from describing my profession as muckraking and me as a muckraker I would refrain from referring to his profession as quackery and him as a quack.

One last tidbit for my colleagues in the press. When I came here today, I heard that there had been severe criticism of the brochure that OSHA put out about this conference. It seems that the American Industrial Health Council and other industry groups are objecting strenuously to the paragraph that reads, "While occupational death and disease represent a tremendous tragedy to the affected families, this massive, yet silent slaughter, is too often a story lost in the workplace."

Industry is objecting, my friends, to the phrase "silent slaughter," as being too inflammatory. I myself thought it was rather nicely understated. But perhaps we can help the industry people out of their problem with the language of the OSHA brochure. Nick Ashford has suggested calling it "noisy slaughter." What it is, what it always has been, is manslaughter.

(Applause)

MS. SCOTT: Our next speaker, Phil Lewis, a producer of the Closeup series for ABC News, did an excellent documentary called "Asbestos, the Way to Dusty Death," which documents quite extensively the problems in the Navy shipyards. And he's done work in various other areas.

I'll turn the mike over to him now for some comments.

MR. LEWIS: In televisionland, if you've done one program on a given subject, you've become an instant expert on that subject. So I just want to assure you that I'm not an expert on occupational safety or health,

but I do know something about television. And since this is a media meeting, I guess that's why I'm here.

I'm a little disturbed by some of what I've been hearing today from the non-media people who are here who seem to be relying very heavily on the media to solve all the problems of occupational health and safety. And I think that's a very misplaced kind of faith to have in the media. I don't really think the media can do very much, except expose and even after a while that becomes very tired.

When the asbestos program that Rachel was talking about, when we started work on that, the first thing we normally do is to research it as completely as we can. And I was amazed to find how much material had already been printed on asbestos and asbestos-related diseases and the history of asbestos diseases. It just went on and on and on. And I wondered why this was such a current problem. Obviously, everybody who wanted to know should have known.

What happens is that subjects become very tired in the media marketplace, and the more they're printed, the less people pay attention to them. Obviously, that doesn't apply to the people who are directly affected by them: the asbestos workers, the union people, the medical people, the government people and the industrial people. But there are millions and millions of other people out there who have no real direct connection with a substance like asbestos. And another story on page 13 of your local newspaper about asbestos-related diseases really doesn't do much for anybody.

So what I'm saying, really, to the non-media people here is, please don't have that much faith that the media is going to wrought miracles for you. It's not going to happen. The place for it to happen is government, not the media. I just wanted really to be very brief. I'm going to tell you two anecdotes and two things that we did, in putting together this asbestos show, which turned out to be very helpful.

The first thing: we found an attorney who was bringing civil suits on behalf of asbestos workers. He was a young fellow, he was from Barnwell, South Carolina, and he was making a career out of asbestos cases. And he was researching the hell out of it. We learned from him that he was not alone. Throughout this country there are attorneys who are making careers out of asbestos cases. And they meet periodically, they exchange information, and they really are about as expert on it now as anybody in the country.

Attorneys have two powers that media people generally don't have, and if you can find one and get him to help you, he's going to be a great source for you. The first thing they can do is take depositions, sworn testimony, from company officials or whomever, and usually these are very illuminating. The second thing they can do, which is even better, they have the power of what they call discovery proceedings. They can force companies to turn over to them material in their files that may go back 20 or 30 or 40 years.

This attorney from Barnwell, South Carolina, sent us a carton of material that was just incredible in its thoroughness, in its depth, in the type of stuff from minutes of the Asbestos Textile Association to internal memos of Johns-Manville, to medical studies that Johns-Manville had done

in 1949. It just went on and on and on. And that proved to be a great basis for us just to begin work from it, to begin to have some understanding of what the asbestos problem was.

The second thing, which is sometimes a little more difficult, and really doesn't happen very often, is if you can possibly find a whistle-blower, find a whistle-blower. By a whistle-blower, I mean someone in a company, in an organization, high enough up to know what's going on, and angry enough to want to help you.

We had an experience with the Navy. We had been dealing with the Navy for weeks and weeks and weeks and weeks, just to visit one of their shipyards, just to see what the asbestos problems might be there. They kept putting us off and putting us off, and putting us off. One afternoon, in the middle of nowhere, we got a phone call from a woman who wouldn't identify herself except to say her name was Mrs. Smith. But she knew that we were dealing with the Navy, that the Navy was really upset about us, that the Navy really didn't know what to do about us, and for us to please continue on.

And in the course of the conversation, she said we would get another phone call that evening. Well, that evening about 7:00 we got another phone call, and it was from a man, and he not only knew precisely what we were doing with the Navy, he knew precisely what the Navy's thinking was on our application to at least visit these Navy yards. He knew precisely what their arguments were going to be. It was obvious that he was very much a part of the Navy and its involvement with us at that point.

We cultivated him, obviously. He was quite willing -- he was eager -- to come along with us. And in the course of our dealing with him over a period of several weeks, he also sent us material. He sent us internal Naval material. He sent us audits of every shipyard the Navy runs as to the asbestos control procedures that were taking place. He sent us messages between Naval headquarters and the ships at sea as to the asbestos control procedures that were taking place or were not taking place. Indeed, they were not taking place.

To this day, I cannot tell you the man's name, we have never met him, we never made any attempt to meet him. He never made any attempt to meet us. And I think it's best that way for our protection and also for his protection.

Apart from that, there are the obvious sources: there are the medical sources, the library sources, et cetera; but I think lawyers involved in civil suits and, by all means, the whistle-blower, if you can find one.

Thank you.

(Applause)

MS. SCOTT: Our next speaker, Tom Curtis, is one of a vanishing breed, and that is a successful free-lance investigative writer. And I really have to give him a hand for pulling that off, because it's an extremely difficult field to pursue, because when you don't come up with a story, you're the one that has to take the loss.

So it's very hard to do. Tom is the -- was the first editor of the Houston City Magazine, which was a new publication in Houston, and earlier wrote an excellent story for the Texas Monthly on problems at the Velsicol plant, which I believe he'll tell us about today. Tom?

MR. CURTIS: Thank you, Rachel. In his moving comments at lunch, Donald Jackson referred to the little plant he worked for. It is a small plant, if you saw it, ramshackle and dirty, not faar from the Huston ship channel, you might think it was owned by a small company.

In fact, it isn't, it's owned by Velsicol Chemical Company of Chicago, which is a subsidiary of Northwest Industries of Chicago, which is one of the top 100 of Fortune's 500 industrial companies. The chairman of the board is Ben W. Heineman who is a longtime Democratic Party power, and reportedly was seriously considered to be President Carter's Secretary of the Treasury.

The company was represented in Washington as attorney and lobbyist by Joseph Califano and by Heineman's son, who works in Califano's law firm. Before Northwest Industries took over at that Velsicol plant, it was owned separately, but it had a long and not particularly distinguished history itself. It was the company that tried to talk Houghton Mifflin out of publishing Rachel Carson's Silent Spring.

That was because Rachel Carson had documented the role of the chlorinated hydrocarbons which are a very large part of the earnings of the Velsicol Chemical Company even today. Things like chlordane, heptachlor, endrin, and so on. Later on it became owned by Northwest Industries.

The same company has brought you tris, which is the alleged carcinogen in children's sleepwear and who also -- the company was then called Michigan Chemical, but it's now consolidated with Velsicol -- was responsible for the PCBs that got put into the animal feed in Michigan. It was Firemaster and it was in a similar bag to an animal feed and ended up in the milk of cows and in the tissues of human beings.

I got the -- the Velsicol Chemical also is frequently accused of putting endrin into the Mississippi River and causing big kills and so on. It pops up pretty frequently. I got a clipping yesterday from a friend of mine in New Jersey, the story is datelined Hackensack: "Owner Plans Clean-up Of Mercury From Site." It turned out the Velsicol Chemical doesn't own it now, but it did previously and they were asked to -- they were asking in court to not be held accountable for this contamination because they said dumping mercury was not illegal at the time they did it, which was 1960 forward. I think people have read the story in Life magazine and elsewhere early on about the Minimata disease in Japan caused by mercury pollution.

That's the history of the company. I'm not a science or a health writer, and I don't really specialize in occupational stories. As Rachel said, I'm principally an investigative reporter, but do other things too.

In December of 1976 the Washington Post was responsible for breaking the story about Velsicol producing a substance, a pesticide that was injuring its workers, and that was how Donald Jackson first learned of this, because he certainly didn't find out about it from the company.

What happened was that a source in the Industrial Labor Department of AFL-CIO slipped an early copy of a NIOSH report to a national reporter for the Washington Post, Peter Milius, and the story kind of went from there. It was a kind of chemical Watergate story. There was revelation on top of revelation. It turned out that there were some deaths of water buffalos in the 60's in Egypt that had been covered up, related to this pesticide causing very much the same kind of paralysis in water buffalo as it later caused in the men who were manufacturing the stuff at the Bayport plant.

There was a coverup among the testing outfit, Industrial Biotest

Laboratories, which had tested it and it turned out had done so in a very sloppy fashion. There were stories in this Post series about the U.S. being the pesticide arsenal of the world and the team of Peter Milius and Dan Morgan became sort of the Woodstein of this story and did an excellent newspaper job of covering it.

Editors do have -- writers do run into the problem with editors that Rachel mentioned of the attitude being, "that story has been covered." Fortunately, I have been writing for Texas Monthly magazine which is edited by a bunch of amateurs, lawyers and people who didn't come out of backgrounds in journalism so they happily did not know that this wasn't a story you were supposed to do, so I got a chance, though not to break the story, to cover in some depth what its human consequences were and to put together what had been a series of piecemeal stories into a coherent whole.

And I think that was the value of the story. It's enclosed in your packets, I believe, and that's what it looks like.

I won't take much time to repeat what's in it because it' there and you can see it, but I will try and say some things that may be instructive for magazine writers especially. Magazines differ from newspapers in that newspapers are interested in news which is why the Washington Post reported on this, and magazines are interested in stories, and so I really looked for the story; as it developed, it was a story full of heroes and villians.

The tips that Phil Lewis gave are excellent ones and I initially did get in touch with lawyers for some of the injured men and in that way began the process of finding out what they had gone through. One of the heroes of the story in addition to Don Jackson is his mother, who kept meticulous

records of his terribly painful attempts to find out what was happening to him. She saw the significance of what was going on and although she had no way of knowing that this was not an isolated incident, that it was related to a series of other injuries, that was totally unknown, she held on to records. She wasn't even sure why she held on to them, but she did so and it made it possible to track back the whole path that he had followed, to doctors, to OSHA, to other agencies and individuals, and it's a very, very painful story, and it was painful enough, I'm sure for you at lunch, hearing Don Jackson's story, but there were at least a dozen other workers who have similar stories.

Those I got to through the efforts of lawyers, through the kind of things that had been discovered, through the fact that the Kennedy sub-committee on -- I believe it was an administrative oversight committee -- used this as a case study and pulled together a number of the documents from the bureaucratic end of things, so when I came to Washington, I found really that a lot of my work had been done for me and a lot of those records were assembled. They would be available under the Freedom of Information Act but it would take a lot longer, so having the documents assembled helped push the story along.

And I tried to do a story paralleling what was happening to the workers, what was happening in the bureaucracy and what was happening outside the bureaucracy, with scientists who knew or felt they knew that something was wrong with phosvel or leptophos but were trying to document it. It was a delayed neurotoxic pesticide that not a whole lot was known about but there had been things documented in the medical literature,

and I did find it useful to go back and look at the medical literature on delayed neurotoxic pesticides which stretches back to an episode in the United States with something called "ginger jake" that was drunk during prohibition and caused some of the similar demyelinating effects that Don Jackson described earlier.

There were heroes and villians all the way through the story. There were representatives of Velsicol who had been approached by this Egyptian who was opposed by his own government, opposed when there was a coverup after the water buffalo deaths. Millions of dollars were being ~~spent~~ on pesticides to protect the cotton crop and the cotton crop was the central element in the Egyptian economy. This was Dr. Abou-Donia who persisted against very strong odds to study the effects of this substance on chickens and other animals.

There were people in the bureaucracy of EPA who really bucked the system to slow down the registration, the planned registration of phosvel --the company was attempting to basically sell it domestically and it was a story of great courage on the part of those bureaucrats.

And it was most of all, I think, a human story of people like Donald Jackson and others. I want to wind this up, but I might mention a kind of an epilogue. Once the story had come out in Texas Monthly in May '78, I had been trying to get the company's point of view and response and basically the company had stonewalled consistently. They'd get lists of questions, I'd approach a deadline, and they would assure me they would get back to me and nothing happened and so on and so on.

Finally, very shortly after the first copies of this came off the

press before it was on the newsstand, I got a call. The officials of the company were very proud of the fact that they had cleaned up the plant and they invited me to a breakfast with Mr. Ver Hoeve, the president of the company, and then went on to a tour of the plant. The story was out. but I was then editing Houston City magazine which I had founded, and I thought I'd have a good story for my own magazine, at least what the company now said, and made a -- I think I spoiled Mr. Ver Hoeve's breakfast, but I asked all the questions I had asked before and though they wanted to be very forthcoming, they assured me they couldn't answer any of those questions and they promised to get back to me.

The PR man took the questions all back to Chicago and said he would call me and give me the information and answer the questions. That simply never happened.

It's always better obviously, to have two sides of the story, but if you can't get two sides of a story, you can do a damn good job of getting one side of the story and touch every base you can and make explicit the fact that the company won't talk, if they won't talk and that happened in that case. Phosvel fortunately, thanks to the people in EPA, Gunter Zweig and Donna Kuroda and others, didn't make it on to your tomatoes and lettuce and brussell sprouts and various other things. I have not stayed as close to the story as I would like to have, but we still don't know for sure whether Phosvel which had these demonstrated effects did cause the damage to workers or whether it was toluene and n-hexane, the two solvents that were also very sloppily used around the plant and they too may have done the damage.

So in a sense it's a story that is not over yet. Thanks.

MS. SCOTT: Michael Flannery, our next speaker is the labor reporter for the Chicago Sun Times and along with Bruce Ingersol did an excellent series that won a number of awards on occupational disease. Mike.

MR. FLANNERY: Thank you. Well, in light of what other people have said, I'm going to restructure my remarks to kind of hit some points that I think might be reinforced and maybe some things that might help those of you who work with daily deadlines and have the pressure of newspaper editors and work in daily journalism.

One of the things that -- and I've got to say at the outset, though -- is unlike perhaps some of the other speakers, I got along pretty well with the people who were my direct bosses and in terms of giving me support and letting me look into and research stories that I wanted to, they were just superb and obviously, if you can cultivate that kind of relationship, you're going to be miles ahead in any business, I guess, but in the course of doing this series of stories last year and earlier this year, myself and my partner Bruce, visited plants primarily in the Chicago area, a few elsewhere in the Midwest, that included lead smelters, battery plants, foundries, steel mills, coke ovens, meat-packing plants, auto plants, chemicals plants and others, essentially heavy industrial enterprises here. Some of the places that essentially posed obvious problems, many of these health hazards had been written about before.

In fact, all of them had been written about before, but one curious thing that I discovered in researching our clips and in going to the list of periodical stuff that had been published in this area was that almost

nothing had been written specifically about problems in the Chicago area, bringing these sorts of things that researchers had uncovered elsewhere, that medical people had come across, some of the stuff that had been in some of the expert literature, none of it had for the most been brought home, been brought down to earth and one of the people earlier today was sort of chiding the daily press for our preoccupation with wanting to talk to victims, when you talk about -- when you say so and so is a problem, this substance represents a hazard, the response so frequently from guys like me well, let me see the victim. Let me talk to somebody who has actually gotten sick. Let me talk to somebody who has actually been harmed by it and I suppose that's precisely what I did, because I did start out as some of the other people have mentioned here, very naive, knowing very little.

My whole background in occupational safety and health had essentially involved conversations with my mother who is an occupational health nurse for the Navy. She's been peripherally involved in the asbestos project and that was essentially all I had known, just casual discussions with her about it, so when I got into this whole area, what I first did was essentially talk to people on my beat, the unions, the folks in local plants, local union halls here in Chicago.

And boy, were they eager to talk, as you can imagine in many cases they were eager to talk, and in other cases some of them were not. But in terms of resources for someone who is just starting out, I would really stress how -- what a peculiar, helpful position unions occupy in this system, for somebody who is going to set about writing about this whole question. Their people are in the plant, they've got good reasons to want

to find out more about what these hazards are. They can put you in touch with the people who are actually on the shop floor, and in some of the more sophisticated union organizations, you've got some people with good technical knowledge, with a good grasp of some of these complex medical and scientific issues, and I think that they can really -- you can tap into that network, you can save yourself a lot of time.

Another useful resource here in the Chicago area was our local public hospital which has an occupational health clinic. It's the Cook County Hospital. That is one of eleven occupational medicine clinics around the country now, Bert Carnow told me, and I would imagine that if there's one in your community, people there, nurses, doctors, patients would probably be eager to talk to you about some of the things that they've encountered.

Another excellent resource, one that I tapped into frequently again here in this area was the School of Public Health, at the University of Illinois. Dr. Sam Epstein who's written a book called The Politics of Cancer and who has been involved in testifying on behalf of the AFL-CIO in some cases -- he's also been retained as consultant by other groups, governmental groups, government agencies -- was very helpful. He was willing to sit down with me, frequently talk over the telephone. I would ask him, I'd say, the exposure was this. This guy says that he was working working with benzene and it was splashing all around and it was getting -- splashing in his face and you know, is that bad, how dangerous is that? And Sam would gasp on the other end of the phone and he'd say, "well, I think that might be pretty bad."

So he would help me out, steer me in the direction of literature, some research that had been done, stuff that I could use to familiarize myself with just specifically what the scientific research said. And, again, that was incredibly valuable in short circuiting and you know, the amount of time, short-cutting the amount of time that I had to devote to research.

Another helpful resource was government -- the government agencies involved in this area, EPA and OSHA, the personnel in OSHA are sometimes bound by regulations that prohibit them from speaking about specific cases, but they again are useful in briefing you on what hazards -- on the degree of danger caused by a specific hazard. You can ask them a question, like "Does splashing benzene around pose a problem?" and they can generally give you an answer or tell you where to find an answer.

And the amount of literature that those two agencies in particular -- EPA and OSHA--are putting out today is mind-boggling, when you take a look at what -- at the mail I receive from the Labor Department and from the government, all the mailing lists I have gotten myself on in the past two years. At the end of the week, if I've been out of the office, I come back in and it seems just to be stacked up in huge piles, so and then there's and enormous amount of good stories in there.

And I think that for so many of us in the daily media and in other media, that's really -- at one level -- what we're after, too. A good story, something that is both newsworthy, that is socially significant and at the same time is going to be something that people care about. And, let me tell you, people really do care about this topic.

I have never, in the seven years that I have been in this business,

had the kind of response that I received from the stories that I wrote in this series. It was unbelievable that people were looking my number up in the phone book and calling me at home. The letters were pouring in, people were coming to the office after some of these stories would appear. People would just come to the office.

There was one fellow who came directly from a steel plant on the southside, and said, "You know I'd just like to shake your hand, I have never seen anything -- no one has ever written about these kinds of concerns before. No one has talked about these sorts of health problems from the perspective that you've written. It's a point of view that I've only heard over a beer in a tavern near the plant."

And I can tell you that there's a lot of people out there who have a lot to say about this and who are anxious to read about it.

And I think one other thing that has been stressed by other speakers at other points throughout the day, that I would emphasize, re-emphasize, is the necessity for making sure that we don't simply focus only on the horror stories. Paul Brodeur pointed out in his remarks, a sequence of events that is genuinely horrifying and certainly the kind of non-coverage of the Love Canal and some of the other major occupational health and environmental health disasters that have been building over the past several decades. The kind of non-coverage of that thing that has pervaded the media is disgraceful.

At the same time, though, there are things that people are doing. There are steps being taken. There are avenues open to redress some of the grievances, and I think that that's something to bear in mind when

you're writing, particularly at the daily level, that people can do something. It's not simply a matter of throwing up your hands and saying, "Jesus, everything gives me cancer or if I get out of bed in the morning, I am taking a risk and there's really nothing I can do about it, so I'm not going to do anything." I think that kind of thinking is fostered, perhaps by an exclusive focus on the horror stories.

One other point. Something that you're going to see, if you do get into writing about this, something that you're going to run into all the time and that is the local application, the local expression of the crisis that John Froines and Tony Mazzocchi referred to earlier today, this tension, this conflict that's developing over the question of productivity, over the question of investments in safety and health and the cost of cleaning up.

The story that is reprinted on page 7, of the tabloid that has caused so much controversy, that I wrote, deals with a fellow who died earlier this year from silicosis. He worked in a steel mill on the Southside here in Chicago in the foundry, and in the course of researching that story and after that story appeared, the people at that company, the people that ran that plant, U.S. Steel, said as they had for several years, "Look, if we're forced to clean this thing up, if we're forced to invest the money that OSHA standards are apparently going to require us to invest, we're just going to close it down because we've got better things to do with our money." And of course, that struck me at the time as the worst sort of economic blackmail. It struck a lot of workers, a lot of people I talked to, as just a lot of bluff and bluster.

Well, lo and behold, three days after Christmas last year, U.S. Steel did, indeed, announce that foundry was being shut down, that 250 or 300 jobs were being eliminated. And if you saw the Business Week article -- I think it's the recent issue, about the liquidation of the U.S. -- of the American steel industry, you know in that industry that's not an isolated incident.

And there certainly are serious problems. And you are certainly going to confront that kind of threat. And frequently it's a difficult thing to deal with. There are folks in that plant who are going to lose their jobs. A lot of them have already been laid off. A lot of jobs have already been eliminated and the final shutdown is coming in November. I have been in touch with some of those people. In fact, I think one of the guys from that plant is here today.

And it's a side of the story that has to be covered as well. And anyway, I would just reaffirm that these are good stories. There are people out there eager to tell you about them. It's not as difficult and overwhelming a topic as it seems to get into. I think that the fact that you're all here indicates, probably, that you're already well into it for the most part.

And I thank you very much.

MS. SCOTT: Our next speaker, Tom Horton, is environmental reporter for the Baltimore Sun. And I have known him since my days at the Sun in 1974. Tom has done some very difficult reporting in the area where we deal with statistics and try to handle some of the sophisticated issues in this area and to figure out how to evaluate them. And he's going to tell us

something about his experience with that involving environmental cancer in the steel industry in Baltimore. Tom.

MR. HORTON: We began, at the Sun, to report on environmental cancer in 1977. We started from the broadest and most general background. The National Cancer Institute's atlas of cancer mortality, I think it was called, which broke the whole country down by county and city into cancer rates for various types of cancer by race and sex, had a couple of years before labelled Baltimore a cancer hotspot. Since it's an industrial town and it has a big port, chemical industries, steel industry with Bethlehem Steel at Sparrows Point and a ship-building industry, the National Cancer Institute had mentioned at the time that maybe this high cancer rate was related to the fact that it's an industrial area.

That's pretty general, as anyone can tell you. We had quite a bit of convincing to do at the paper before we could start on this. The Sun is certainly not a pro-business rag by any shot, but it's not been staunch labor newspaper by any shot either. They were not enthusiastic, originally, about turning three reporters -- I worked with two others, labor reporter Frank Swoboda, who's now at the Post and Peter Behr a reporter who is in our Washington bureau -- they were not enthusiastic about just turning us loose for a couple months to allege that Baltimore business community was killing people. So we also had a problem because city health officials, many of whom are I think still as concerned with the city's image as its cancer rate, has gone to great lengths to sort of poo-poo this cancer hotspot idea. They said, "Well, you know, they studied cancers from 1950 to '69, and it's really out of date." The long period over which they

studied the population, almost 20 years, because of all the mobility of the American population makes the figures suspect.

Also, Baltimore is not unique but along with a few other cities it is not a combined jurisdiction with the county and they said, look, you know, you took all these other big cities and industrial cities and lumped them in with the lower cancer rates from surrounding counties. So you can't compare.

Well, we just by chance came across some statistics that I have not seen anyone make much use of and I think they could be useful for someone who's starting from ground zero, just to take a look at possible cancer problems in their area. EPA contracted with an outfit called Systems Sciences in Silver Spring to do essentially a continuation of the cancer atlas. This studied cancer mortality from 1969 on into the mid-70's and for a variety of reasons EPA never used it. This was all rigged. They were going to print out their own color-coded map just like NCI did, but you can get those statistics for your particular state of county or whatever, I guess, from Systems Sciences. You can get everything but the Maryland stuff. I never have returned all the data but I'll send you that if you're interested in Maryland. But between this which confirmed and even augmented the NCI stuff that and just going around to universities, to NCI, to a few doctors who specialized in occupational health, we were able to compile -- I think we worked literally a week, the three of us just on the memo to convince the Sun that this was a worthwhile effort, but we were able to get started on that.

We did several stories, some of them, we were able to get some very

hard information. We got some very good documentation at Sparrows Point steelworks. Sparrows Point employs about 15,000 people, and had a cancer rate that appeared to be substantially above even Baltimore's average. I might add that lung cancer among white males in Baltimore in epidemiological studies is about 60 percent above the national rate. Well, Sparrows Point was above this in some studies. Which I might add Bethlehem Steel disputes.

Some of the other stories, they really kind of showed me what -- how close to the forefront of knowledge you're working when you get into this. I remember interviewing several workers during a strike at Conaco, it's a chemical plant in South Baltimore, and they were telling me -- these guys who were not particularly well educated -- one of them walked up and said "What do you know about multiple myeloma." I said, well it sounds like cancer to me, and he said, "Well, there's only 120 of us that work here and three of us have died of multiple myeloma in the last four years." That's a rare disease. I checked with some doctors. It's the kind that they don't even give you a statistic. They say; "Well multiple myeloma, that's what Martha Mitchell died of." That's how they describe it, when it's that rare.

But I thought this is a good deal, but then several people would check this, said there's just no relation between that and anything those people over there could have worked with, so you know, let that percolate for a few weeks. And at a party I ran across a guy named Humphrey, or Humphries, from Hopkins who I somehow mentioned multiple myeloma and he said, "Well, I'm kind of the world's expert on that and we just have in the last month

or so begun to think maybe it's related to an industrial disease."

Then he said "What can you tell me about it?" and I said, "Hell, how am I going to write a story saying I told you something about it." So anyway, maybe in a few years, we'll know. We'll finish the Conaco story.

Another part of the series -- and I mention this because it gets into a couple points of more general interest -- we examined a small asbestos crushing operation on the outskirts of Baltimore called Powhattan Mining which employed about 20 people. They took asbestos the size of softballs and made it into something like asbestos flour. You closed your hand on it, poof out in your face. And they shipped to Allied Chemical and other companies that used it in, I believe, in some process involving plastics. But Powhattan, when I checked its records with the state, had never been cited for any violations. We just assumed since it was a little company and from the outside it was really raty looking, that they would just violate every standard going.

Well, to make a long story short, they did, but they had never been cited because as an extension of the mining industry they were regulated by the Bureau of Mines, one of their agencies, MESA. And we went up to Pittsburgh, the guy -- the MESA guy -- just flatly said, "You know, as long as a company will work with us, we'll sure never cite them or shut them down." And Powhattan had been willing to work with them like that for years and years and years.

And then I went to the doctor, a private physician who handled Powhattan's workers, and I didn't believe this guy at first, but subsequent conversations with a lot of workers convinced me he didn't know that they

worked with asbestos. He thought that Powhattan Mining just mined something and he hadn't asked them in three or four years. And some of the workers actually didn't know they were working with asbestos either.

This I might add led me to look into this problem of diagnosing occupational diseases, because he had seen a number of lung abnormalities but never really thought that they might be related to asbestos.

It appears that in Maryland -- and I suspect most states -- very few doctors are qualified or aware enough, I guess is a better word, to make occupational disease diagnoses. This doesn't mean that they're derelict in their duty. I mean, they make the clinical diagnosis, -- you know, if the guy's got a problem they find the problem but they do not think or are not able to take a good occupational history. The upshot of that is that in Maryland there's a system by which any doctor who sees an occupationally-related disease, fills out a card and sends it to the State Health Department.

Well, that's been in effect for 15 or 20 years, I think, and only one doctor in the state has ever sent them a card. He's a guy at City Hospital who was very helpful to us in our series. Of 28,000 workers' comp claims last year, less than one percent involved occupational disease. I have to think a lot of that is just because it's not reported and not recognized as occupational disease.

The other point that Powhattan brings out is that for all the involvement that one has when you get into cancer reporting, for all the involvement you have with standard setting an issues over parts per million and some regulation setting, at various sophisticated levels, I think you can't

stress enough from a reporter's point of view the need to just get into the workplace, if at all possible, to look at the workplace. A lot of times while federal regulators and industry are arguing over parts per million and per billion, there's nothing in a lot of workplaces that couldn't be handled just through basic hygiene. Powhattan was a good example of that. I mean, MESA, the mining people, could sit there and argue part per million with you all day long and you just hadn't resolved anything, but one walk through Powhattan which I took and Christ, it was just all over you. It was falling off the rafters. You know, you pick it up with your feet, they even had a big shed out back where asbestos dust was piled up to the roof.

I asked the woman that owned the company: "Well, what are you doing with this?" "Oh, well, the state used to let us dump it, but they won't so we just pile it up." She didn't know what they were going to do with it.

So a workplace tour can sometimes really give you a picture that you just don't get even from looking through the regulatory agency's files.

I won't go into detail on some of the other articles we did. Suffice it to say we haven't banished cancer from Baltimore yet. There was a mayor's blue ribbon cancer task force formed and -- although they initially vented a lot of fury and expended a lot of effort on worrying about what we have done to the city's image -- I think they have ended up doing some good. They were laying on some more industrial hygienists, if they can ever find any to hire, and they're, I believe, serious about requiring good cancer reporting -- perhaps setting up a cancer registry in Maryland -- so those things are not inconsequential. I think perhaps as important --

well, this may not be as important, I am looking at it from the Baltimore Sun's view -- is that it kind of opened the door to doing regular and serious and reasonably sophisticated reporting on occupational disease and that continues. And I think that may have been one of the more important long-range effects.

I tried to list just a few observations from some of the work we've done in Baltimore that might be useful to people reporting. I think one of the things you have to get used to right from the start is that it's going to be rare when you come out with something clearcut, even in cases where you just think common sense tells you you really got it nailed.

The Bethlehem Steel cancer mortality was one example. We had a guy from Hopkins, -- he's now at Pittsburgh, I think -- named Ted Radford who is an environmental epidemiologist who had done studies showing that their cancer rate was extremely high, ling cancer among the white males. Bethlehem employs largely white males. Now Bethlehem shot some holes in this study Radford had used a method of statistical extrapolation which had not been used much before. It was not a preferred method. Well, that was true, Radford said, -- that's because Bethlehem Steel wouldn't give him any data and this is something you very commonly find -- industry shooting down a study for imprecise data or insufficient data but they got the data and they won't let go of it. Now Bethlehem also had their study which showed that ii was about as healthy a thing as you could do to work in their steel mill. Radford pointed out that that was because they had not included any retirees with the study. Now, you know, I was reminded of this when Paul Brodeur was talking about it's not necessary to get into

one of these either-or situations. We were helped in this case because Bethlehem lied to us twice. They said that they had included retirees and Radford did not.

Well, we got the studies and called them up and said "Look I think you misspoke." And they lied again, so that helps a lot in enabling you to place your outrage on the right side -- or hopefully you do. But one of the points I want to make is you can fall into a real trap in reporting on environmental cancer if you buy the starting assumption that the chemical is innocent until proven guilty, because I just don't think you're going to do that. If you buy that though, you're probably never going to write much.

One case in point, there was a trial in Maryland in 1978 which Dr. Epstein participated in, I mean this was a case where -- you're very familiar with it, Rachel, because you wrote some of the first stories on it -- a little chemical company. It was a soluvent reprocessor actually called Galaxy. It was in a rural v[illegible] and no other industry around. A local pathologist had documented abnormally high rates of a rare cancer. I think they were lymphomas. It got into court because Galaxy sued the guy for libeling them, defaming their character. And so we had a case held in this little rural Maryland town, bringing in all sorts of big-time cancer experts on both sides, which everyone thought would prove, well, Galaxy was either causing the cancer or they weren't. We had, oh, we got into days and days of arguments on latency periods, you know. The Galaxy side said that you couldn't really trace it to Galaxy because they had only been there 10 or 12 years and the latency periods for those cancers would be

longer.

And the other side brought in people who said now latency periods could be as low as two years. Galaxy's side dredged up the fact that there had been papermills there a hundred years ago and that may have been the cause, not the Galaxy chemical. Well, the other side said, "Well, we did some research and we found out those papermills didn't use the pulp process and that's where the chemicals are that could have caused cancer from the papermills."

Then the other side comes back, "Well, no, no one really knows what it is in the papermill process. They only know that it's linked to lymphomas." It went on and on. The doctor got off, although Epstein tells me he's being pursued again, that Galaxy has appealed it and is suing him for four million bucks on appeal. But it fairly well convinced me that you're not likely to prove things like this in a court of law given current data and especially given the thinking now that the single cause and single effect theory of environmental cancer is probably just not the way it works.

Some of the other things you're going to get into, I think, I just made a little listing of myths for lack of a better word. One that you will be hit with constantly and it's not a myth, it's smoking. I mean, smoking in combination with all sorts or potential carcinogens does greatly enhance your chance of getting lung cancer. And you know, the trick is not to deny this. I mean, you're usually pretty irresponsible if you don't ask workers about their smoking habits and include that caveat in any story you do, but, on the other hand, it's a great tactic in industry to change the subject.

Another thing, I would advise anyone getting into ancer reporting is to really kind of give yourself a good education in rat tests and animal tests because you're going to have that thrown up in your face a lot. And I'm still amazed at the number of people -- well informed, pretty intelligent people -- who just flat believe that, one, if you feed a rat enough of anything it'll give it malingant tumors, and two, that it's just everywhere. I mean, there's not much you can do because you're going to get it from this palce if not from that place.

So I think you can't be too well grounded in that.

A couple other -- oneother area I wanted to get into and then I'm going to let you ask some questions. Company doctors, that's a field I got interested in stemming from the Powhattan thing. Now, there are about three types of company doctors. I mean, there's the little company that just hires a physician down the street and says "Look at our workers." Then you've got the big industrial medicine clinics which often just contract with the health insurers for the big companies. You know if somebody gets sick at a company, they will sat, "well you go to this health clinic."

Incidentally, in Baltimore the president and owner of the biggest industrial health clinic is also chairman of the medical board of review for occupational diseases for the Workers' Comp Commission which might have something todo with that one percent, too. He says not, but it's interesting.

The other level, of course, is a big company like Bethlehem or Allied that has a company doctor and the only conslution I've come to, I certainly can't indict company doctors in general, but my experience has shown that

as long as you have the current trand in American industry toward decentralized operations, such a Bethlehem Steel has Sparrows Point with a manager of each of those centers who is largely in control, runs his own show and is judged on short-term profit, usually quarterly profit and loss statement. As long a you have doctors essentially working for people who are judged on short-term profit, I just cannot see how they will ever do, you know, give workers their due.

MS. SCOTT: Thank you, Tom. Our last panelist, Bill Richards, can't be with us today because of obligations -- story obligations that he has. We're running late on time and I'd like to take about ten minutes of questions if those of you here are interested, because this is supposed to be a workshop. I would just like to make a few comments from listening to what some of the other panelists have had to say before we open up for questions and one is that in my 9 or 10 years of experience in writing in the occupational environmental area and going out and trying to figure out who's telling the truth, what Paul said about being lied to by companies has been my experience and the corollary to that is I cannot think of one time where I found a worker lying to me.

Now this may be unusual, this may be just my experience, but very often the worker has the most to lose by talking to you. I have gone to plant gates and stood outside and taken down people's names and phone numbers as they left the gate, and I would call and talk to them later. These are working people who have something to lose. Some of them were non-union and they could lose thier jobs. Some of them, even though they were union, they could be harassed in other ways and they sometimes were.

They could be put on a bad assignment, they could be forced to work overtime and so forth, so workers very often speak in spite of the fact that they are taking a big risk and that's one reason -- I suppose -- why when a worker does talk, usually what he has to say or she has to say is to the degree that they understand what is going on, and often they are much more knowledgeable than I would have expected, they do know what they're talking about.

Another point about the benefits of working with the labor union: I went through a tour of Bethlehem Steel doing a story on lead poisoning and couldn't figure out where the problem was coming from. I was walking through a wire mill and I looked up at the ceiling and it was coated with this white stuff and so I said to the industrial hygienist who was taking me on the tour, what is the stuff on the ceiling, is this lead dust and he said "oh, no, no, that's ..." and I said, "Well, in that case is it asbestos?" He said, "Oh, no, it's talc. It's some talc that some crazy foreman sprayed up there."

So I found that very, very hard to believe and I later on called up a local steelworkers president, Dave Wilson, and related this experience to him and he had somebody get a sample of that and take it to be analyzed and it turned out to be 50 percent lead, so that was how we got that part of the story.

So I very often make it a practice with that kind of story to check with the labor people, before I go into the plant and afterward, and very often I find out that they say things like, "oh, is that why we cleaned up

the plant today?" And so I was very often walking across wet floors because they were kind enough to clean up for me. I think in the future we're going to see much more interest in waste disposal, much more interest in workers' compensation issues, and these are things that we really have just barely touched on today, but if you're in this field, you're going to be reporting on that and I think you ought to be aware of that.

Okay, do we have questions and could we have them first from members of the press since this is a conference for the media.

MR. HENDERSON: I'm not a member of the press but I'm here and I'm going to ask the question anyway. I'm Tom Henderson, from Pittsburgh, Pennsylvania. I'm a lawyer, and I'm not used to getting praised what with Watergate and criticism with fees, so I'm not speaking from as defensive a position a I normally do.

My comment is that, and I guess it's in the form of a question, perhaps to Mr. Lewis, whom I probably disagree with a little bit more aside from his nice comments about my colleague in South Carolina, and that is I wonder if the standard of journalism in the areas as important as this, is not whether people will read it but whether people ought to know it and I cite personal experiences of mine. I tried a case in Louisville, Kentucky in April and May 1976 and probably out of 24 prospective jurors, I don't think that there were two that had heard about -- let alone understood -- the relationship of asbestos in any type of disease, let alone asbestos and cancer.

One of the things that -- one of the early defenses by the asbestos industry was that the causes of cancer are not known, after the literature

and after the discovery had reached the point that we knew so much about it, that that defense began to dissipate. Now, the defenses are somewhat more sophisticated, but in this last jury that I selected in of all places not a metropolitan area, but in Bloomington, Illinois, a farm area, out of 24 jurors who were asked the same questions or essentially the same questions, I dare say that perhaps as many as eight or ten of them already had preconceived notions about what they might decide and therefore were preemptorially challenged by the defense and probably the other 16 or more whatever the number was, had heard about the problem so it's working and if it takes flooding the marketplace as it were with the whole problem of asbestos it seems to me to be worth it. Could I have a comment on that.

MS. SCOTT: What's your question?

MR. HENDERSON: Well, your statement was that you consider -- and this is the standard that I hear from other newspaper, TV journalists, not so much from perhaps Mr. Brodeur or Mr. Curtis and others who have written magazine articles but those in the television media and the newspaper think it's more important as to whether or not it's going to be interesting enough that people will read it or will catch their attention and I'm wondering in something of this importance, whether or not it ought to be the standard of whether the public ought to know about it.

MR. LEWIS: I don't think there's any question that's part of the standard. What I was trying to suggest is that there's a diminishing return. I mean, after X number of stories or television programs or books, or magazine articles, there is beginning to be an assumption and most people who care to know know about it.

But what I was really trying to get at was some of the stuff I heard at the lunch today, which were pleadings for the media to take the lead in this, for the media to correct this, for the media to do this and what I was suggesting was that the media is limited in its power to do any of these things and exposure is one thing but going beyond that to correction is quite something else.

MR. BASSO: My name is Whitman Basso. I am with a center for international environment information in New York and we publish a bi-weekly newsletter called World Environment Report which does indeed report on occupational health and safety and other environmental health problems around the world.

My question is a loaded one. Judging from what I've heard this afternoon, one of the major problems faced by reporters covering occupational health and toxic substances in the environment is the lack of access to authoritative and knowledgeable sources of information, covering a vast variety of industries, asbestos, ceramics, nuclear, coal, et cetera. I would like to know whether it would indeed be useful for the news media to have immediate access to knowledgeable sources of information drawn from industry, from government, from environmental organizations, from labor unions, from scientists and people in the academic communities who have the information that you need and who have agreed to respond to your inquiries.

That's my question.

MR. LEWIS: I think also if you had ten of these people responding, you'd get ten different answers and that doesn't solve the problem, it just compounds it. It's the authoritativeness of the material that's a problem.

It's not the viewpoints. There are viewpoints galore, so what about the scientists who have the authoritative information who have done the research.

There are scientists who will disagree. Dr. Kotin is a scientist. Dr. Selikoff is a scientist.

MR. FLANNERY: On the question of benzene, for instance, that was one I had a lot of trouble with because what was involved there was the question of exposure levels and the only people who really knew what exposure level had been was Upjohn, over in Kalamzoo, Michigan and in that particular story. I had guys telling me that benzene was splashing out of vats and hitting them on the head and they were using it to clean things. I was told this by a number of people, I had no reason to doubt it, but I went over to Kalamazoo, spent a couple of days there, waited for the company to say something and finally a meeting was held with the vice-president for public relations in which he very politely and very cordially said "I can't tell you anything."

And the problem, of course, one of the things I didn't touch on in my talk, is that companies don't want you, and Upjohn didn't want that story written, because in many of the stories that I did about plants around here the workers in those plants read for the first time, it was the first time they became aware of hazards. That they became aware that Joe who used to work next to them, but left for one reason or another a few years ago, had become dreadfully ill, and maybe had died because of something that he was exposed to and that they were still exposed to, so what's at stake are workmen's compensation insurance premiums soaring, really literally

millions of dollars, third party lawsuits, lost production, OSHA coming in and ordering you to spend a great deal of money to fix things up, so I think what you're talking about is a noble idea in the abstract but when you get down to hard cases, specific cases, I think the problem is that the people who are running the show -- it gets right down to what Paul referred to earlier -- it's follow the money trail and the guys with the money frequently have the data and if they give you the data, they're going to lose some of their money perhaps.

MR. BRODEUR: There really isn't any substitute for an enterprising journalist being given the time to go out and pursue his craft which is pursuit of inquiry. The problem that I referred to earlier is that very often newspaper journalists simply don't have the time so they have to tape the statement, the assertion and the denial. What we're seeing now in this country -- and we have all seen it because we're reading the newspapers -- more and more stories about environmental and occupational disease. Newspaper editors all across this country and publishers are beginning to realize that these are big stories. This is happening because the threat is now being posed to the middle-class, which is what runs this country. Middle-class in our country has abandoned the workers through history and the irony is that, of course, we are now not faced with occupational crises but an environmental health crisis because -- for a very simple reason, workers make things that all the rest of us use or that we're exposed to when they are using the environment around us.. Mark my words, this business of Love Canal, the contamination of ground water and drinking water that supplies the United States threatens the middle-class in

this country and that's when you're going to see the reporters being given the time, the money to pursue these stories. That's when you're going to see action and I don't really think that what we need is so much, although I am sure the publication of yours, if you have a publication would be very valuable resource for reporters. I think the main thing is to spring them loose, give them the time to dig.

MS. SCOTT: Okay. One more question.

MR. (UNIDENTIFIED): Mr. Lewis, I just want to take a friendly kind of exception to some of the things you said in your closing. You said that to two of the gentlemen that were here, just previously, you can only do these things so many times and they become limp and they just lie there.

Well, a we all know, the thalidomide story has been in the news for many, many years and I guess it kind of lay there until yesterday. I was watching TV with my family getting the early news and I think it was on Channel 2, they had a story about a number of thalidomide babies who came from Britain and they were in this Outward Reach program up in Minnesota, and as I watched these young folks whom I had heard about, probably 200 times in the past couple of years, as I watched them, as I saw them, I found myself crying, as I find myself even now, finding it difficult to hold back the tears.

Now, somebody in the media saw a story that didn't need a whole lot of words. They had the pictures, the motion pictures of these poor unfortunate victims of this thalidomide problem that so many of us had seen stories on so many times before, so I say in a friendly way, we've got to

find a different twist, some way to really make it work the way this moving picture of these poor young human beings worked on me and I'm sure hundreds of thousands of other viewers yesterday.

MS. SCOTT: I'm afraid we're going to have to cut it short at this point because we're running late.

Following this there's a reception, co-sponsored by the Chicago United and the Illinois State Federation of the AFL-CIO, in the King Arthur Room on the third floor. Thank you all for coming this afternoon.

# INDUSTRY PERSPECTIVE OF OCCUPATIONAL HEALTH

Ronald Lang
Executive Director
American Industrial Health Council

MR. GREER: One of the most knowledgeable people about OSHA in this country is Jim Foster who is going to be doing the introductions this morning. He's got a real sense of history, he's been with OSHA since the first days of the formation of the agency. I worked with him for a number of years and there's no man that I have greater respect for. He's the director of the News Media Services Division of the Occupational Safety and Health Administration. I just want to say thanks for a good job, Jim.

(Applause)

MR. FOSTER: I don't quite know how to follow an act like that, so I won't really try. I'm subbing for Glen Pearcy who many of you met yesterday from up here, the gentleman with the beard who is our new director of public affairs for OSHA. He's with Dr. Bingham this morning, she's away making a speech and will be back here later this afternoon.

Our first panel this morning is an industry perspective of occupational disease. The moderator is Ronald Lang who is -- and I have to take my glasses off to read this, excuse me -- executive director of the American Industrial Health Council. He's going to discuss the industry perspectives of occupational health at this seminar. He's also serving as executive director of the synthetic organic chemical manufacturers association and as its chief operating officer, a position he's held since 1968. Prior to becoming executive director of SOCMA, as it's known, Mr. Lang served as director of public relations for the Association from '64 to '68. He's also written broadly on international economic and political affairs for many foreign publications. Mr. Lang.

MR. LANG: Thank you. I have never been introduced as a panel before. Judging by the audience, I wonder if conferences of this kind aren't hazardous to your health themselves. We have a lot of dropouts from yesterday's long program.

Last night one of the things that some of us were wondering was really how many of the people in the audience are actually working press because I know we have an awful large number of industry representatives here to monitor the conference and I think there are a lot of labor representatives and others and yet this was designed as a conference for the media. I think it would be interesting, at least for me if those of you who are actually working press could raise your hands, just to get some feel. Looks like about a quarter. About what we had estimated.

I am pleased to be here today, not only because the subject of occupational health is important but also because this country is in the midst of a national debate concerning chronic health issues, acceptable risk and the public interest. How the media understand and cover this national debate will have a major impact on how it is eventually resolved and what trade-offs between government control and personal freedom the American public will have to accept.

Not very many years ago, a seminar on this subject would have attracted very little interest on the part of government, labor, industry or the press. In fact, even with its newly recognized importance, I see from the attendance and from the hands that there are many other important writers and media which are not represented. This is regrettable because

of the key role set aside for you in this debate. I hope you will carry back some of what you learned these two days to your missing colleagues.

I also hope you will think for a moment about the phrase that was missing from all of yesterday's media discussions. Some of the speakers talked about how a writer in this complex area can't trust what industry says or what a federal agency says or even what the Congress says and I agree wholeheartedly that skepticism is a key ingredient in a good investigative reporter, although some of the remarks yesterday seemed to go beyond what I consider healthy skepticism, but the speakers also pointed out that you in the press have an immense power to change things for better or for worse. If you don't do your job, who will find the Love Canals or the kepones or the Watergates.

Conversely, however, if you don't do your job right, who's going to worry about the thousands of families thrown on to the welfare roles, maybe indefinitely, when there was no health hazard to begin with.

What I am saying is: stay skeptical, question everyone and everything all the time, but apply that same skepticism when talking with those who have learned what a comfortable living one could make if you get on television, or in the newspapers often enough, regardless of the validity of your charges. This country needs more, many more investigative reporters, responsible investigative reporters. It was disheartening to me yesterday at a seminar for the media to not hear one speaker or one questioner even refer to the phrase responsible journalism. I'm not the

one to say this. Your colleagues should have, but I just could not let it go unsaid.

Since I was slotted in this program as a representative of the American Industrial Health Council at the last minute, and would like to allow time for questions, I won't attempt to analyze in detail OSHA's generic cancer proposal nor comment on all the other chronic health issues you either heard about yesterday or will hear about later today. Rather, I'd like to share some thoughts with you as to how industry looks at these issues and possibly even to suggest some questions or areas of discussion you may wish to pursue with some of the other speakers later today.

Since I personally am not a medical doctor, an oncologist, or an epidemiologist, I'll quote from a number of such experts in the course of my remarks, and we have available in the AIHC pressroom on the eighth floor, copies of the full speeches and full articles from which those quotes were taken. This is for the benefit of any skeptics who may wonder if the comments were taken out of context.

I'd like to begin by looking at the political framework in which OSHA decided to hold this seminar. There clearly are very real concerns, not only within the agency but also within the labor movement, the scientific community and, maybe, surprisingly for some of you, within industry as well involving complex occupational health issues. Seminars of this kind provide a forum where experts from these various interests can look at what is being done to meet these concerns and what should be done in the future. This is useful, even if it does lead occasionally to loud exchanges.

I have some very real problems however, with OSHA's press announcements regarding this particular seminar. The publicity was designed to not only ask the question of whether there is an occupational disease epidemic in this country but apparently also to answer it, and with some pretty tough language and rather irresponsible charges. The OSHA brochure proclaims that there's a "massive but silent slaughter" taking place, with more than 100,000 Americans dying each year from hazardous materials in the workplace. Just rhetoric, a "grabber" to get the press interested in coming to this seminar is the way they explain it. Yet, we in industry are dismayed and angry that a responsible federal agency should be making such inaccurate and inflammatory charges. There clearly are hazards out there which have not yet been identified but they're going to be found and controlled only through a cooperative effort among scientists from government, industry, labor and the academic community. Irresponsible language of this kind makes it difficult, if not impossible, for these disparate groups to work together in the national interest.

As to the magnitude of the problem, I believe a little perspective is in order here as well, especially since many of you have accepted and printed data which is at best deceptive and at worst totally false. There simply is no cancer epidemic in this country today, much less one attributable to occupational exposure to chemical substances. Let me repeat that: There is no cancer epidemic. I see a few incredulous faces out there, so, let me quote from a few of those experts I mentioned before.

"While the number of cancer victims has increased dramatically in the

past 40 years, much of the increase is due to population growth, when changes in the size and age composition of the American population are taken into consideration, overall cancer death rates have increased only slightly for men since 1937 and actually have decreased slightly for women." --The Surgeon General's Report on Health Promotion and Disease Prevention for 1979 issued less than two months ago.

"Contrary to popular belief there is no cancer epidemic in the United States. The only type of cancer which is increasing significantly is lung cancer and this is due overwhelmingly to cigarette smoking." --Dr. Merrill Eisenbud, the New York University Medical Center in June.

"Occupational exposure in the workingplace accounts for no more than six percent of all cancers in males and two to three percent in females." --Dr. John Higginson, director of the World Health Organization's International Agency for Research in Cancer.

"I don't subscribe to the theory that we are on the verge of a cancer epidemic resulting from wholesale pollution of the environment." --Dr. Arthur Upton, director of the National Cancer Institute, last month.

"We should lay to rest the idea that it is these man-made compounds abroad in the land that are responsible for the fact that 25 percent of Americans die of cancer. They are not. The possible effects of all known man-made chemicals, when totalled, could contribute only a miniscule fraction of the total of all carcinogenesis in our population." -- Dr. Philip Handler, president, National Academy of Sciences, May of this year.

I could go on for some time with similar comments of cancer experts throughout the world. There is a problem and there are very real concerns, but there's no epidemic -- except in the minds of those who need one to justify the massive new government programs and appropriations or maybe to gain a little media attention.

Don't let these comments mislead you, however, with respect to the position of American industry on this subject. Even the one-to-five percent of cancer which may be attributable to occupational exposure is far too high. The American Industrial Health Council and responsible industry leaders from all segments of the economy have committed themselves to identifying any materials which may be contributing to that one-to-five percent, and in taking whatever steps are necessary to minimize the hazards those materials may pose.

I, personally, am dismayed at the amount of time I have spent in the last six months debating in the press with representatives of the government, whether the correct number is one percent or 4.8 percent or 11-1/2 percent or 39 percent. Since science basically does not yet know what actually causes cancer, such arguments are nothing but estimates from various cancer experts and epidemiologists. Charges of a cancer epidemic in this country almost always guarantee a headline, but I sometimes feel like one of those medieval monks debating how many angels can fit on the head of a pin. Whatever the number, let's go on with the job and stop this meaningless competition for column inches. There's too much at stake to do otherwise.

OSHA published its proposed generic cancer standard in October 1977 and the next panel will probably shed much heat and hopefully a little light on the merits and demerits of that proposal. I mention it only because it was OSHA's effort to find an administrative shortcut for identifying and regulating potential carcinogens that resulted in creation of the American Industrial Health Council.

AIHC was formed two years ago as an ad hoc group by responsible leaders from a number of American industries who agreed with two basic concepts: It is of great importance to the nation as a whole to develop scientifically sound methods for identifying and controlling substances which pose a hazard to man. And such an effort which involves the frontiers of science has to be done cooperatively among experts from government, the scientific community, and industry.

Historically, government policies in this complex area like carcinogenicity have been developed by lawyers and by regulators within the agencies, promulgated over the objections of industry and then almost immediately challenged in the court. Eventually, the critical scientific and public policy issues involved have been decided by a three-judge panel in Seattle or New Orleans or Philadelphia. The issue is simply too important to be handled that way any longer.

The AIHC board believed at the time the Council was formed and continues to believe today that a way must be found to work together in solving these chronic health problems. To illustrate that commitment, let me point out that AIHC's legal committee, very early in the game, recommended

a variety of legal actions, which could have been taken to keep OSHA from moving ahead with its generic cancer policy. In rejecting this advice, AIHC's board sent a strong message back to the legal committee: We're in this to make it come out right, not to "win" it, and our objective is for the government to eventually promulgate a responsible, scientifically sound national cancer policy -- regardless of the burden such a policy might put on individual products or companies or industries. We said it then, we say it now and we mean it.

In that role, AIHC has attempted to make available not only to OSHA but to all of the other federal agencies involved with chronic health hazards the best scientists we can get -- whether they be from industry, from the academic community, from abroad or from anywhere else -- it is the largest single effort of this kind that industry has ever put together and has involved disciplines such as onocology, epidemiology, mutagenicity, industrial hygiene and many others with names I can hardly pronounce.

Unfortunately, it's too early to measure how effective this effort has been in contributing to the development of a sound national cancer policy. OSHA's generic standard, when it's issued later this year or early next, may provide the first indication of whether government and industry can work together in such a complex undertaking or whether that fundamental public policy decisions of this kind must be set by judges with no training, experience or real knowledge in this area. Possibly Dr. Bingham, in her talk after lunch today, will provide some indication of whether confrontation is the only real alternative from the government's viewpoint.

I have several times referred to the need for a sound national cancer policy, and I'd like to take just a moment to review some of the key aspects we believe that policy should encompass. It's important to understand that there are two separate and distinct decisions which an agency must make.

The first involves a scientific evaluation of available evidence about a substance and the relationship of that evidence to possible human hazard. Once such a hazard has been identified a decision must be made as to the appropriate response by each regulatory agency, considering the laws under which it operates and the need to protect workers, the public and the consumer against that hazard. Basically the first is a scientific decision drawing upon everything science knows about cancer and cancer causation and the second is a political decision, based on how far the regulatory agency believes the public wants it to go in eliminating risk. Unfortunately, many of the government proposals in this chronic health area intertwine the two, the science and the politics.

OSHA, for example, would like in its generic cancer proposal to adopt some very simple criteria for carcinogenicity: any substance which causes any tumor, benign or malignant in any single animal species at any dose level through virtually any root of administration would automatically have to be treated as a human carcinogen. There are literally thousands of such materials which would flunk this test, both natural and man-made. In fact, you probably had a number of them served at lunch yesterday.

Cancer is simply too complex to be dealt with in this simplistic manner, even if such a simple system would greatly ease the life of our

regulatory officials. There is only one scientifically responsible way to go. Whenever there is a suspicion that a chemical substance may be a human hazard, whether such a suspicion arises from epidemiological work, from animal tests, from bacterial mutations or otherwise, a group of experts must be ready to look at all of the available evidence on this material. They must provide their best assessment as to whether that evidence indicates a potential human hazard and an estimate as to the degree of that hazard. Pure and simple this is a scientific judgement which must be made by the best scientists the government can tap.

AIHC has recommended that a panel of such scientists be established by the government from nominees suggested by the National Academy of Sciences to do just this sort of assessment on a full-time basis for all the federal agencies involved in identifying hazardous materials. Right now, all too many such scientific decisions in Washington are being made with significant influence from the lawyers, from last week's headline in the Washington Post or from a position paper issued by the Environmental Defense Fund. There's too much at stake for the nation as a whole to allow these decisions to be made by anything less than the best available scientists, free as much as possible from political pressures, news headlines or other extraneous influences. Such an independent scientific panel would accomplish these objectives and in addition might help eliminate some of the decisions now being made almost solely as a result of competition, among the federal agencies. Competition for headlines, for staff and for appropriations.

Obviously once such a material has been identified as a carcinogenic hazard by the panel, the actions taken by each of the regulatory agencies may differ. This is entirely appropriate, because standards needed to protect the employee exposed eight hours a day to potentially high concentrations of the material in a plant may have to be entirely different than those adopted by EPA where the only concern may be a trace contamination or by the Consumer Product Safety Commission which has to be concerned about such things as potential exposure to small children in the home.

It's in this area of regulatory response that the general public, your readers and viewers must have an input. Zero risk is impossible. Anyone who says otherwise is either uneducated or irresponsible. There will always be some degree of risk associated with everything we eat, everything we breathe, and in fact, everything we do in life. The real issue involves acceptable risk, where should the line be drawn between the degree of risk the American people want their government to protect them from and the degree of risk they would like to consciously be able to accept or reject. The present debates over saccharin and nitrites are good examples but the problem is one which involves virtually every aspect of human life.

For example, I'm sure many of you barbequed hamburgers this summer in your back yards. Did you know that every time you did so, you formed on the surface of those hamburgers a material which is a known human carcinogen, not a suspected one -- extremely small quantities but there nevertheless.

What role do you want your government to play? Should it ban barbequing?

Should it attempt to give you some information as to the degree of potential risk, so you can decide? Or should it basically forget the whole thing? I don't have the answer, because there is no right answer or wrong answer. It's a societal decision which in a democracy should be made by an informed public.

Automobiles illustrate the tradeoffs even better. It's estimated that lowering the speed limit to 55 a few years ago saved some 5,000 lives annually. A good statistician can estimate just how many more lives would be saved if we dropped that speed limit to 45, or 35 or 25 and while the decision to lower the speed limit was made as an energy conservation measure, there are some 25,000 Americans alive today who would otherwise be dead. We could save thousands more by lowering the speed limit further. Should we? Aren't you willing to take an extra five or ten minutes each day to save a human life? These are tough choices.

There are many catch phrases and catch words which result in good headlines. It makes much better copy to write an article asking about how much a human life is worth than to discuss the complex issue of acceptable risk but it does not help our government in establishing national policies in this area yet sound, carefully written analyses of this problem and its implications will help because the government soon has to make a fundamental decision as to what the American people believe is acceptable risk. Right now that decision is being made within the regulatory agencies with virtually no input from the public. Congress is considering a variety of legislative proposals which basically are designed to reflect

what it thinks the public feels is acceptable risk and a number of White House agencies are drafting policies for the entire federal government which are based on their reading of the public's attitude and yet there is very little real understanding on the part of the American people, either of the issue itself and the hard choices which will have to be made or the implications if that decision comes out wrong.

As the Supreme Court Justice Brandeis once said "Experience should teach us to be most on our guard to protect liberty when the government's purposes are beneficial. Men born to freedom are naturally alert to repeal invasion of their liberty by evil-minded rulers. The greater dangers to liberty lurk in the insidious encroachment by men of zeal, well-meaning but without understanding."

Your role in this national debate is quite clear and also quite difficult. The media simply cannot be in a position to only cover what are often staged media events and to report charges and counter-charges, however irresponsible. They must find the time and the knowledge to provide evaluation and interpretation of these events and charges. In addition the issues must be put in a context the general public can understand. It means very little to your reader to say that that hamburger I mentioned earlier might increase their chance of getting stomach cancer from three times to the minus ninth to one and a half times ten to the minus eighth. I don't even understand that. And by the way, those numbers are made up since we really don't know whether there's a hazard much less what it might be.

If the public's going to understand risk and all of its implications, the issue must be couched in terms they can understand. For example, it means something to me to say that my increased risk of getting cancer from that hamburger may be the same as my risk of being killed by lightning driving to the airport tonight. That kind of analysis can help me decide what is acceptable and what is not.

The problem with repeated headlines that everything causes cancer is as John Higginson of the IARC recently noted, the public is being lulled into believing that effective measures are being taken against cancer, when very likely the most debated and public measures will be relatively ineffective. As a recent bumper sticker I saw read, "Life Causes Cancer." If the public ever adopts that attitude -- and they're not too far from it today -- how will we ever get them to take some of the steps which must be taken, if we are to truly reduce the incidence of cancer. If the man in the street has an attitude which says, "since there's no way I can avoid cancer, why bother," we're all in deep trouble. Government, industry and labor.

I see my time is already running short and I hope I have not rambled too far afield, but it's impossible to cover this subject in any meaningful way in 20 minutes. I have tried to leave you with an understanding that there are many responsible leaders of American industry who are anxious and willing to work with the government in solving this important problem but it cannot be solved in the traditional mode of confrontation and it will not be solved as a consequence of irresponsible charges and circulation-building headlines.

We in AIHC are willing to cooperate in any way we can with the government, with the scientific community, with the labor unions and the environmentalists and with the press to increase public awareness of this issue and to work towards a scientifically responsible solution. You as members of the press are both part of the problem and part of the solution, and I hope we can work with you. Thank you. I'd be happy to try and answer any questions you may have and suggest maybe it would be good to use some of the ground rules we had yesterday and begin at least by inviting the media to ask the first questions. Thank you.

MS. RANDALL: I'm Judy Randall from the New York Daily News and I would like to ask you if you don't think -- two questions really --if you don't think there is a difference between, in the area of acceptable risk, between somebody who chooses to drive an automobile at a speed he can control and involuntary exposure in the workplace to chemicals that -- whose identities the workers don't know. That's my first question -- and the second one --

MR. LANG: If I may answer that first, just stay there. Absolutely, no question about it. I think that what is acceptable under one set of circumstances may be entirely unacceptable under another, and I think you're absolutely right. There are far more serious concerns and probably far more stringent standards in many cases that may have to be applied in involuntary exposure cases like the workplace. I think, for example, there are many decisions that I personally would like to make. I'm in the middle of a very difficult diet at this point, and I've looked at all the saccharin data and I'm willing to take what I think is a risk on saccharin.

I'd like to be able to use it because it helps.

But a lot of other people may not want to use it under those same conditions, and I think what's acceptable to me may well not be acceptable to a lot of other people but there are different degrees of acceptability without question.

MS. RANDALL: The other thing I wanted to ask you: it seems to be there is something contradictory about saying that science doesn't know what causes cancer, but you're also saying that we know that most lung cancer is caused by cigarettes. Either we do or we don't know what causes some cancers. I don't think we can have it both ways.

MR. LANG: I think, absolutely, there are some individual materials which the evidence very clearly indicates are carcinogens. Benzidine for example -- which is not used in this country I don't think anymore -- clearly is a material that will cause human cancer. We're not quite sure how it causes that cancer, but, clearly, it does cause cancer.

Science fundamentally, however, does not know what the mechanisms of cancer causation are in general and recognize, I'm not a scientist, so that in the case for example of the vast majority of materials, not just synthetic chemicals, but man-made substances, all right, what you have is you have conflicting evidence. You may have cancer -- or you may have a tumor, a benign tumor in one animal test and 50 others would show nothing. You may have epidemiology, some good, some bad. There may be all kinds of test evidence which in general will be contradictory and what you're making, no matter who makes it, is going to be the best judgment that can be made as to whether that evidence says it's a hazard to man or not.

And it's a judgment decision on those cases. All we're asking for is that judgment be made by the experts, the best ones the government can get, not by lawyers within the government agencies, not by industry scientists, not by a judge somewhere. It's a scientific judgment as to what that evidence means. We want the scientists to make it.

MR. MARCUS: My name is Steve Marcus, I'm from Technology Review. I was very impressed a few years ago by an article I read by Dr. Alvin Weinberg in which he coined the term, I believe it was his, trans-scientific, by which he meant there were many issues, especially the kinds of issues we've been discussing at this conference. He used them on a low-level radiation which simply cannot be resolved by the methods of science. There would just be too many animals, laboratory animals for example, too many complicating factors, you could not resolve it scientifically -- You could gather information maybe provide some persuasive indications, but never ever resolve it, so even though I'm very pleased and impressed by your stars and stripes tribute to science, I have to warn you of the limitations.

Now in that regard, now that I've made my speech, I would like to ask you a simple question. You referred to independent scientific advice. I have been writing on these issues for quite a number of years. I don't think I have ever met an independent scientist, and I was wondering if you could tell me where I could find one?

MR. LANG: Absolutely correct. There is no individual whose attitude on some of these questions isn't colored to an appreciable degree by where he's worked in the past, by what he's read, by his own experience over the

last 40 or 50 or 60 years, so you're never going to get a totally independent view from anybody on any issue in this country.

What I'm proposing, however, is that the scientific judgments be made by individuals who are not responsible to an agency that is up before the Congress trying to get increased appropriations or in some cases trying to continue to get any appropriations at all, by a scientist that works for a chemical company, by a scientist that is on the staff of the Environmental Defense Fund. Those people are making what should be scientific decisions which are very heavily influenced by the headlines in yesterday's newspaper, by the questions of the election of the President or members of Congress, by factors that have nothing whatever to do with science, and I believe you can get scientists separated from responsibilities for regulatory and political control to make those assessments. And as opposed to your question, your initial comment -- again, I agree you're dealing with some very difficult questions here. [illegible] has a list of suspected carcinogens based upon a literature search but in effect the same kind of criteria that OSHA's proposing as a federal standard now.

On that list is lactose, which is milk, sugar and fructose, which is fruit sugar. Hardly anybody believes these cause cancer but they meet that OSHA test. What you want to do is have people able to evaluate everything that's known about the material and make a judgment as to what that evidence means. And all I'm suggesting here is that judgment has got to be made -- as much as possible -- separated from political, business, labor and other influences.

MR. AMBURG: I have two questions. In the first place, in your list of the kinds of scientists that you don't want calling the shots, would you also include scientists who are in universities or foundations or associations which are funded by industry which has a direct interest in the manufacture of these agents, and the second place, would you care to tell us approximately how much money your organization has been spending and has available to spend on this carcinogen policy question and what your sources are?

MR. LANG: Okay. Take the question in reverse order. We have about 120 members from most major sectors of the American economy, corporations. Our budget is -- oh, I guess we've been in existence now for two years, although we started out to be an ad hoc committee to run for three months, we've been in existence for two years. We are probably spending about a million dollars a year, about a million dollars a year, probably half of that for legal advice.

We are running -- right now we have spent -- will have spent by the end of this year probably about $200,000 more than we've taken in and I'm not quite sure how I'll manage that cash flow problem, so we are spending more than we have at this point.

It is a very real problem, my guess is that the companies we're involved with, have committed far more than that million dollars in manpower, in industrial hygienists, in epidemiologists, in their scientists, to this effort. The dollar is probably the smallest part of the effort. Manpower is probably a lot more, but it's been done in a cooperative vein to try to get the government to look at the very complex

area here and to devleop a policy and a regulation for the entire federal establishment that means something.

Now, with reference -- I'm sorry, what is the first part of your question again?

MR AMBURG: The -- you listed various types of scientists --

MR. LANG: Okay. With reference to the first part of the question, we haven't made any restrictions whatever. All we've said to the government is that in the making of scientific decisions, we want you to get the best people the government can get. That's why we suggested that the National Academy of Sciences nominate the people, and we haven't put any restrictions. It could well be that individuals within existing federal agencies are appropriate, it could be people at the American Cancer Society, it could be people in academia, including ones that may have had some contacts with industry.

All we're saying is separate them from any influence you can, and put them off in a corner, to some degree the way the Supreme Court operates. They're separated from -- in theory at least -- from basic political pressures, all right. But you'll never get total independence, no question about it, and you will never get total agreement, because at the bottom line you're getting the best scientific judgment, and that's all it's going to be.

MR. PRINCE: Anthony Prince, Local 65, Steelworkers. Mr. Lang, my question is: I have read all the material that the American Industrial Health Council put in the folder and even then I am not of the opinion that the Council has a legitimate role to play in this debate. My question is

-- your organization came into existence in 1977 -- is that the point at which industry began to realize that it had a commitment to the public well-being?

And my other question is: Why do you foresee such a short lifespan for the American Industrial Health Council, which is what you wrote in your press release, if your commitment is to the ongoing improvement of occupational safety and health and not simply which is what I believe to be a front group that was formed with no other purpose but to defeat OSHA's carcinogen standard.

MR. LANG: Well, it's a complex series of questions, but let me take them in order at this point. Recognize that industry if it decided to go the historic road of confrontation and lawsuit has a thousand trade associations already in existence. Any one of them could have filed suit and done exactly what historically has happened in the area of cancer standards. You don't need AIHC for that.

AIHC was formed really because a relatively small group of people began to step back from the issue and effectively said "This can't go on this way." Our objectives are exactly the same as the objectives of the government. We are just as anxious as the government is in finding any of our materials out there that are causing health problems to our employees and we are just as anxious as the government in finding ways to control exposure to those materials. And if we're trying to get to the same place the government is, and the same place the labor unions are, can't we do it together? And that was the basis on which AIHC was formed -- its limited lifespan and as I think I mentioned earlier, I'm a volunteer in this.

I don't get paid for running this. This speech I gave you here I wrote Sunday afternoon in my apartment. That's the only time I had. But this was formed on a short-term basis because when OSHA published its generic cancer standard, the deadlines for trying to influence that standard, for putting in comments, for bringing scientists in, was I think two months, published in October and I think the original deadline was December 9th. So we had two months and everybody agreed, we would doubletime everything for two months. The standard itself has drawn out now over two years because I think the government has come to recognize that the issue is a very complicated issue and, if it comes out wrong, it's going to have very serious implications for the nation, for the members of your unions, clearly for the members of industry and for the consumers in this country.

And the objective is to get it to come out right, to pick up everything that's a hazard and to control everything that's a hazard, but not to misidentify hundreds of other materials that are not hazards, because we talked yesterday about the costs to companies of these health regulations and of their controls. Don't kid yourself, the cost is not to DuPont or to Dow or to U.S. Steel. The cost of these are picked up by the consumer. You people pay for it, and nobody's objecting. We in AIHC have never objected to the cost of any single regulation, we have objected to the cost of excessive regulations and unnecessary regulations, but never to the cost of a regulation to control an identified hazard and we have been very, very careful and very conscientious about that.

MR. (Name Inaudible): I am told this is the last question. I'm with

the Chicago Tribune and since risk assessment is so important, I am curious to know how you arrive at the risk of hamburger and driving to the airport, how did you arrive at that?

MR. LANG: How did I arrive at it. I didn't arrive at a risk assessment for hamburger, all I pointed out was the fact that we know that everytime you barbeque a hamburger, you've got a known carcinogen cause on the surface of the hamburger. I didn't make a risk assessment, because I don't think anybody has ever looked at whether that's a hazard, but there's not a suspected carcinogen, not the kinds of things in general we have talked about here. We know the material in that hamburger causes cancer.

MR. (Name Inaudible): How do you find people who are willing to give you that kind of glib assessment that you came up with earlier.

MR. LANG: I just made up those numbers. That's what I did, I just made those up. I have no idea because I don't think anyone has really looked at it. Those are made up numbers. As far as automobiles are concerned, again, same thing. The numbers I quoted are base numbers from the government in terms of the number of people that are now alive that would have been dead, if the speed limit hadn't been reduced to 55 and any good statistician can estimate how many more lives would be saved if you dropped it even further.

MR. (Name Inaudible): Just tell me who is willing to come up with the easy comparisons that you just gave a little while ago.

MR. LANG: No easy comparisons, there are people out there, Richard Wilson of Harvard for example, just put in very detailed testimony in

connection with the Food and Drug Administration regulation dealing with this question because FDA is now involved with another fundamental problem which is okay, you have a material which may be hazardous to health and it's in something at a level of one part per trillion, one part per quadrillion -- I don't know what the one is after quadrillion but we are getting test methods that can identify levels of that kind.

What does that mean in terms of hazard to man? Because this room right now is full of molecules of many different things which are suspected of causing cancer. What does that mean in terms of a hazard to you people. It means some of you are likely to get cancer from breathing the smoke-filled air. I don't know and I can't answer it, I'm not a scientist, but there are scientists out there in the universities and in government and elsewhere who have devoted entire careers to this risk assessment question and yet you hear very little from them, you don't see them at debates of this kind, they're not on these panels. They should be -- and that's all I'm pleading for -- is get the experts into the issues that are issues that have to be decided by scientists.

Thank you all very much.

MR. FOSTER: Thank you very much, Mr. Lang.

# OF MICE AND MEN: CANCER IN THE WORKPLACE

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MR. FOSTER: Our next panel is entitled of " Mice and Men, Cancer in the Workplace." The moderator is Dr. Umberto Saffiotti. He was born in Milan, Italy, is now a resident of Bethesda, Maryland. He's a participant on the cancer panel and will be discussing carcinogens, their nature and identification. Dr. Saffiotti has been with the National Cancer Institute since 1968 and currently is chief of the laboratory of experimental pathology in the carcinogenesis intramural program in the Division of Cancer Cause and Prevention.

From 1968 to 1976 he served as the associate director for carcinogenesis of the National Cancer Institute. Dr. Saffiotti.

DR. SAFFIOTTI: Thank you. I'm concerned that I have been asked to serve as the moderator or chairman of this session and will have to try and fit a long program in a very tight schedule. We are already somewhat over our time so the plan is to have the first three talks given in your program about 15 minutes each. We will have to try and be, if possible, even shorter because we are running out of time. We'll have a short coffee break and then after that there are three rather than two talks, Dr. Olsen has been added to the program between the talk by Dr. Epstein and that from Dr. McCarville. So we have a very heavy schedule, I want to try if we can to leave some ten minutes at the end for discussion and therefore, we will proceed fairly rapidly throughout.

The first speaker of the panel is Dr. Thomas Mancuso from the graduate school of public health of the University of Pittsburgh. Dr. Mancuso has a long and very distinguished history of research in the area of occuptional epidemiology and occupational cancer and I think his work is known to most

of you. He doesn't need any further introduction and we'll be glad to hear him talk, to give us an overview of this complex problem. Dr. Mancuso.

DR. MANCUSO: If I knew that our time was going to be cut short because of the previous speaker, I would have encouraged him to shorten his time a bit. I'll try to do the best I can. There is a prepared presentation which I hope you will find and if you don't find it there, I would like to ask you to write to me and I'll send it to you. One thing I always worry about is that -- is the importance of having the total context from which various statements are made and I would be very happy to make it available to you. I really deeply regret the idea that we have to cut short our part because it really represents a very extensive area that needs to provide you with the background that you need to have to develop the proper perspectives that you wish to work with.

The purpose of this introduction is to make you aware that in the United States for approximately 40 years, the concepts of occupational cancer were well established and documented, and that there was sufficient scientific evidence for prudent governmental officials to recognize that this was a most logical means to identify specific carcinogens and to prevent cancers affecting large populations exposed to the same cancer agents throughout the country.

And I'm going to skip now and if I appear disjointed you will realize it's because of the time problem. In 1942 a very comprehensive book about occupational cancer by Dr. Wilhelm Hueper provided the factual evidence relative to the new concept that the natural and man-made environmental carcinogens of chemical, physical and parasitic nature were the most

important and frequent causes of human cancer.

He said, it is in the best interest of mankind that industry make the proper adaptation for eliminating and for reducing environmental and occupational cancer hazards for effectively combating the growing wave of toxic and carcinogenic risk propogated by modern industry, which represents biological time bombs with a delayed fuse. He warned, in the nature of the new cancer panorama; cancers of all types and causes display even under already existing conditions, all the characteristics of an epidemic in slow motion through a continued, unrestrained, needless avoidable and in part reckless increasing contamination of the human environment, with chemical and physical carcinogens and with the chemicals supporting and potentiating their action, the stage has been set indeed for a future occurrence of a catastrophic epidemic which once present cannot be effectively checked for decades with the means available, nor can its course appreciably be altered once it's been set in motion.

The belief which has been frequently stated in the past that occupational cancer is a minor problem is false in concepts and in fact. Each chance recognition of a new occupational cancer demonstrates what was not known before, further, the additional factors occur with vinyl chloride; the multiple occupational cancers can occur of different organs, liver, brain, lung and possibly other organs due to a single type of industrial cancer providing striking evidence of a potential reservoir of carcinogenic agents among the thousands of chemicals that have been used in the work environment which have not been studied or investigated.

Again, the potential magnitude of the occupational cancer problem

extends beyond the specific chemical carcinogen itself, because each such chemical may constitute an indicator to a large group of similar chemical structures should any of this large ---than, should any of this larger group of similar chemicals prove to be carcinogenic then the magnitude of the risk would extend to an ever-widening circle of industries, processes and exposed populations.

In essence, only now are we becoming to be -- beginning to uncover some of the occupational cancer problems which have existed for years and were not recognized. Your recent attention to asbestos, vinyl chloride, arsenic, bis-chloro-methyl ether and experimental cancers induced in animals by kepone, trichloro-ethylene and a long list of other chemicals reported by the National Cancer Institute, together with the 1,200 chemicals identified by NIOSH that indicated tumors in animals, are illustrations of what lie ahead, as each industry is studied, the chain effect of the potential cancer risk in other industries, occupations and community unfolds.

The problem of the identification and recognition of occupational cancers has been extremely difficult because in the past decade there never was any legal requirement that the industrial chemicals be tested for their cancer-producing effects prior to their introduction into the workplace and the resultant worker exposures.

Since many thousands of industrial chemicals, estimated at 200,000, have been introduced during the past decade, the real carcinogenic potential of these chemicals whether acting alone or in combination with each other has never been established. The carcinogenic potential of

industrial exposures further reflected the reports of carcinogenic effects from just a single dose of dimethylnitrosamine by injection and by inhalation. Further, the observations by Saffiotti that the carcinogenic potential of dimethylnitrosamine could be considerably enhanced in the production of lung tumors from 5 percent to 70 percent when hamsters were also subjected to ferric oxide, which alone did not cause cancer, indicates that various chemical combinations of exposure in the work environment may have a greater carcinogenic potential than has been recognized. This comparatively recent developing observation of the cancer effect from the combination of industrial chemicals has brought about the unsettling recognition that virtually all prior limited testing of industrial chemicals that were done decades ago were primarily of single chemicals, rather than in combinations of chemicals used in the work environment. The scientific unknowns, therefore, expand the carcinogenic potential of many thousands of chemicals with each other and with the chemicals involved in their interaction in the work environment.

The national concern is compounded by the realization that in the prior years that whatever testing was done of the industrial chemicals for toxicity and carcinogenicity was the basis of our present medical understanding was invariably short-term laboratory experiments, and the primary exposure was by ingestion or injection in experiments, rather than by inhalation exposure which is the particular means of exposure to the worker.

Further, the chemicals tested in animal experiments were at room temperature, yet when these chemicals are used in industry they may be

subjected to heat and may change their composition or unite with other chemicals in the work exposure to form new chemicals whose carcinogenic and toxicological potential have not been identified. These studies have extended the range of the scientific unknowns of toxicity and carcinogenicity relative to industrial chemicals.

Consequently we have serious fundamental problems, the realization that the microchemical environment contains not only the many thousands of chemicals known to be introduced into the work environment, but in addition, now we know that when these chemicals and products are subjected to heat, new chemicals are formed, which multiplies the range of the thousands of chemicals whose toxicological cancer effects have not been studied, either alone or in combination with other chemicals.

What must be recognized is a virtual vacuum of the scientific investigation, over the years, of the microchemical environment of the industries throughout the country. The point is that as long as the necessary scientific studies relative to the known and unknown hazards are not carried out, and thousands of such studies are required the true magnitude of the scope of occupational cancer due to the industrial chemical environment will not be uncovered and made known to society.

In the face of these scientific unknowns how can anyone arbitrarily assume, as has been consistently done in the past, that occupational cancer is a minor problem. This is a vicious cycle in which the assumptions preclude the studies and without the data the assumptions remain. If the studies had been done, the original assumptions would be found to be

grossly false and the scientific misunderstanding that has been maintained over the years would have been reversed.

In essence industrialization has proceeded at an ever-expanding pace for decades, but there never was the concomitant recognition of the need to determine what would happen to the industrial population in terms of industrial chemical exposures. And may I add, there never was the professional manpower there to be able to recognize the occupational health hazards and the occupational cancers in most of the industries in the United States.

I should like in the few minutes left to just indicate to you that geographic pathology -- let me do this extemporaneously because I don't think I have enough time now, that the identification of industrial cancers and the development of understanding of major scientific unknowns relates also to the question of host-response, the susceptibility, resistance and adaptability, the influence of the environment and the interrelationship of the host to the environment, and I have in mind the problem of the immigrants who came to this country many decades ago, and the black migrants that moved from the south to the north in search for a job. And to give you the essence of what I have prepared is that the foreign-born were given the dirtiest jobs and exposed to the most hazardous environments, that the blacks coming from the south were given the dirtiest jobs in industry and exposed to the highest concentrations of chemical dust, fumes, vapors, mists and gases, and that the combination of the endemic factors particularly relative to the blacks, the concept of the social biological imprints, the legacies of poverty and environment,

and the endemic factors in the early years of life which provide the basis for increased risk to the microchemical environment, the movement from the rural to the urban areas and the subsequent affect following migration to exposure to microchemical environments and the development of cancer.

There was among the foreign born a higher rate of lung cancer compared to the native born and among the blacks moving from the rural area to the north. There was a hundred percent increase among the black migrants from the south to the north; whereas comparing the blacks and the whites in the State of Ohio against each other for those who were born in the State of Ohio, there was relatively no difference in the lung cancer rate.

And so I want to emphasize that I do consider within the host factor that poverty for decades has been the fertile soil for the diseases of malnutrition, infectious diseases and associated physiological impairments affecting the susceptibility and adaptability of the individual in subsequent years of life. In this respect malnutrition in combination with subsequent environmental factors may have some direct bearing on cancer development.

Now, I want to make sure that this is not taken out of context. It's the environmental factors within the work environment that is causing -- is the principal cause of this thing. What I'm trying to do is emphasize some possible explanation why some individuals do get cancer when they're exposed to the same carcinogen and others do not. And finally, I'll have to close by saying in effect that I do believe that the worker in industry can -- that one fundamental approach for the identification of occupational cancer, and other illnesses is the concept

of utilizing the industrial worker nationwide as the epidemiological intelligence field force as observers, the eyes and ears of what is happening on the job. And finally, I want to close with this paragraph:

Professional manpower. The identification of control of occupational cancer requires that professional manpower to see, to know, to recognize, to evaluate the chemical exposures and their effects on the workers, and the proper means for control. How can there be recognition of occupational cancer if there are no properly trained physicians and nurses available at the workplace. How can the toxicity and carcinogenic nature of a substance be identified without toxicologists. How can society and the government become aware of the effects on the industrial populations and on the public of the microchemical environment if there is not the professional manpower to undertake such evaluations.

And reference to this question about an epidemic, if there is no one there to do the recognizing, you'll not see the epidemic that is there.

DR. SAFFIOTTI: The next talk is the one that has been assigned to me on the topic of the nature and identification of carcinogens.

We have heard a lot -- I would like to speak from here, is that alright? The problem of identifying carcinogens relates to what we know about their nature, because we have to develop appropriate methods for the detection of their biological effects.

The problems of epidemiology have been already outlined by Dr. Mancuso and in previous discussions at this meeting. Dr. Rall has very appropriately indicated the difficulty of utilizing a method that relies on the manifestation of a long-term effect in a population as a means to

protect that population from potential hazards. Simply stated, we cannot wait for human cancer evidence to accumulate to an extent that it can become detectable epidemiologically before we can intervene with some protective actions, if we have adequate evidence of other kinds.

The other kinds of evidence that have been widely used for this purpose are of an experimental nature. Now, you have heard over the years a lot of discussion, some of this sort of ironical, about cancer in rats not being relevant to cancer in man, or all such things. Let me just pause for a second and remind you that the progress in medicine in the last century is largely based on what we have been able to see in our laboratory animals. The development of experimental medicine is a major tool, is a major way to lead towards the progress of scientific medicine started in the middle of the last century, has been very largely based on the careful and controlled -- I repeat controlled -- reproduction of disease patterns in animals where you can actually have a controlled experiment and see what factors are responsible for certain agents, for certain effects, and which ones are not.

So the reliance on experimental animals is a time-honored basic tool in medical research. Obviously, one has to make sure that we have animal models that are relevant, that are similar to the human type of disease that we want to study. And here is the important point that over the last several years, but particularly in this past decade, most major forms of human cancer as we know them from human pathology, have been reproduced in experimental animals by chemical induction. That is, by treating the animals with chemicals you can induce in these animals most of the major

types of cancers that are known to be representative of human cancer pathology.

Now, that is, for example, the case with cancer of the respiratory tract, cancer of the larynx, cancer of the bronchus, which is the major type of lung cancer, in their various histologic types. It is true for cancer of the digestive tract, cancer of the esophagus, which is a very prominent form of cancer in parts of the Asian continent. Cancer of the stomach, which is somewhat declining -- well, it's declining in the United States and some other countries, but still of a fairly high incidence. It's not to be dismissed. And very important, cancer of the large intestine, which is in fact increasing in the United States and several other countries. All these are reproducable in animals by chemical induction, with a pattern very similar to that seen in the human.

Cancer of the pancreas, which has been -- for which animal models have been developed in the last few years, which is a major form of cancer in the human and one that again is on the increase.

Cancer of the liver, which is not of very high frequency in the United States, although there are some suggestions that it may be increasing, but it is a very high-frequency cancer in other parts of the world.

Cancer of the kidney, cancer of the urinary bladder, cancer of the mammary gland, and so on. Not only can we see the reproduction of this pathologic entity, but we can see that the steps toward the development of these cancers, the cells of origin, the early changes, are becoming more and more qualitatively recognized as being very similar in the animal models and the human counterpart by studies that compare the two.

We are now much more informed, say in the last decade, about the mode of action of chemical carcinogens that fade in body tissues, the way they are changed metabolically to become reactive molecules that interact with target biological molecules in the cells that are hit by these chemicals. We know much more about the specific chemical interactions of chemical carcinogens with the target macromolecules, and these include the genetic material DNA, the messenger and RNA material, and the proteins.

Now, we are in the last few years -- we know in the last few years, from work in several laboratories, that there are specific components, the bases in the nucleic acids that are hit by carcinogens in specific ways, so that we have been able to identify the specific interaction products, chemical products of carcinogens and the NA bases that have a considerable degree of chemical specificity. And there are now very sensitive methods that have been developed, including some that were recently developed by Dr. Harris in our laboratory, to identify extremely small quantities of these interaction products in the tissues.

So we are beginning to see how to go about mapping the fate of these chemicals in the body, which target cells they hit, where do they bind preferentially, and what happens subsequently.

All this now being studied in comparison in animal and human tissues. Now, how do we study the effect of carcinogens in human tissues when obviously we cannot make experiments giving carcinogens to people, because it would be obviously unethical and hazardous to do so. In the last few years in our laboratory, the work of Kurt Harris and colleagues, and work in other laboratories has shown methods for the culture of human tissue

explants in vitro. That is you take, for example, from surgical material a piece of normal bronchus or intestinal mucosa or esophageal mucosa, pancreatic duct, the target organs of cancer induction. You can then take these tissues and maintain them in appropriate culture conditions in the laboratory. They become experimental tools. You can then put carcinogens on those human tissues. You can do the same with the corresponding animal tissues.

This line of work has been very exciting in the last few years, two or three years that this has been established, because it has allowed us to show the correlation between the pattern of reaction of animal tissues and the corresponding human tissues to carcinogens.

The message that has come out of this is that there is once again a very striking qualitative similarity, all the way to the molecular manner of interaction of chemicals forming a specific target reactions with the genetic material of the target cells.

However, in all these studies, as well as in long-term studies of tumor induction, one can see considerable variations on the quantitative level. For example, species-to-species differences there are very marked quantitative differences. In fact some species or strains of animals will be very resistant to certain carcinogens. Others will be very susceptible. Some will react by producing tumors at certain sites in certain organs, others in other organs, so that it becomes very difficult to predict the specific reaction or the specific response, quantitatively from one set of conditions to another.

In the work on the interation of carcinogens with human tissues, another factor is coming out very clearly which shows a marked

inter-individual variation in the quantity of carcinogen that is bound to these target macromolecules in the cells. That is, my bronchus can bind a certain amount of say benzopyrene in the air. Somebody else's bronchus may bind 100 times less. In that case I may be 100 times more susceptible. We don't know yet enough to be able to correlate precisely these potential indices of exposure at the tissue level with susceptibility. But they are an encouraging development in giving us potential markers for susceptibility studies.

Now, the development of in vitro methods, that is methods in which cells or tissues are kept in culture conditions in an incubator and can be treated with carcinogens, have been a very valuable tool added to the arsenal of methods for the study of the effect of carcinogens in the last few years. And they include effects on the induction of mutations. They include effects on the transformation of normal cells into cancer cells in vitro, and then a variety of other methods that are essentially, again, addressed to pick up marker changer, such as changes in DNA structure and the ability of cells to repair such damage.

Now, one of the important developments that will make a considerable difference in our ability to intervene in a preventive fashion early in the control of exposures, such as occupational exposures, will be that of validating the methods, the short-term methods, so that we can begin to be more and more reliant on those. The advantage of the short-term methods is, of course, that they are very rapid to give us critical answers. They are not necessarily cheap and dirty, quick methods. Some of them are very delicate biological systems that we have to use with professional competence and caution. But in the proper hands they constitute very

promising approaches to early detection of key effects that may become better and better established as indicators of cancer induction capabilities on the part of the test chemicals. Now, the present cancer policy proposed by OSHA, for example, recommends the consideration of these short-term tests as supporting additional evidence, but not as evidence sufficient by itself in the absence of animal data, to demonstrate or to be taken as demonstrating the carcinogenicity of a chemical. In the next decade, I hope, we will really be able to pin down this area much more precisely.

Now we, in the last few minutes, come down to the animal test problem: The animal test is still the key tool we have for trying the effect of unknown agents, chemicals, in a biological system in a mammalian species which is close enough, as I said before, to the human to be used as a reliable indicator of the potential effect in the human. There has been, as you know, a considerable amount of discussion on the quality of the tests, the criteria for the interpretation of the tests. In the past there have been, in fact, somewhat different criteria used by different agencies in the government in their interpretation of these findings.

A recent effort this past several months has led to what I think is a very useful summary of these criteria, which have been agreed on by scientists and regulatory officers in the key agencies, the Food and Drug Administration, the Environmental Protection Agency, the Consumer Product Safety Commission, and the OSHA, joined in the IRLG, which is the Interagency Regulatory Liaison Group. This group has called on the research agencies in the government, especially the National Cancer

Institute, and the National Institute of Environmental Health Sciences, to lend them time and effort and perhaps competence of some scientists -- I've been one of them -- to work together to prepare these criteria, as areview, as a scientific review, as a summary of the state of the art in this field.

This lengthy report has been published in the July issue of the Journal of the National Cancer Institute. I've left a few copies of it with the press office and they are probably going to make some additional copies. If you find them there, fine. If not, please let me know, call me, or just take a note, it's the July issue of the Journal of the National Cancer Institute which has this report which is entitled, "Scientific Basis for Identification of Potential Carcinogens, An Estimation of Risks." It contains a lengthy, somewhat detailed discussion of all these criteria. Those of you who feel strong enough to go through all this thing and are interested and have the background to go into the details, will find what is now, I think, a reasonable agreement recognized in the scientific community.

We have had the benefit of very extensive public debate and very extensive contributions from all sectors of science and society, through the mechanism of public comment and hearings that the government has in its various agencies. The comment to the OSHA cancer policy is an enormous stack of documentation that has really provided the government with the expert opinion, the documentation, the data offered by a very large range of members of the scientific community, and so have many other such hearings and public comments received by other agencies. So I think this has not been a document put together in splendid isolation by government bureaucrats.

This is essentially what I wanted to indicate.. The animal model is not an esoteric concept. It is the logical development of current methodologies in science. It's the mainstream of scientific methodology. It is the basis on which we have learned how to cope with most diseases by learning to handle experimental models of them. It would be a tragedy if we were to miss the opportunity to continue to do so in the most effective way, to get early warnings of hazards based on experimental methods that could be used as an efficient basis for protecting people from reproducing the extremely impressive sequence and tragic sequence that Dr. Selikoff has illustrated yesterday, of continued inaction in the presence of increasing evidence of hazards.

I would like now to continue with the presentation of Dr. Legator, who is to discuss the topic of cancer prevention in this context. Dr. Legator is Professor and Director of the Division of Environmental Toxicology at the University of Texas at Galveston. He has previously worked at Brown University, and for a number of years at the Food and Drug Administration. His work, particularly in genetic toxicology, is outstanding and well-known, and I don't need to spend more time in favor of recommending short time to you.

DR. LEGATOR: I would simply like to continue where Dr. Saffiotti left off, and certainly say that in terms of animal testing for carcinogens there is no question about the fact that with new products we must do extensive animal testing, and it would be totally immoral and unconscionable if we continue to put materials into the environment that have not received comprehensive definitive tests in animal models, and the qualitative relationship here is excellent.

The quantitative relationship, again, as Dr. Saffiotti stated, is another question, and a statement that I think it would be hard to challenge is probably the fact that the potency of a carcinogen to man can be determined by the length it takes a committee to decide on a positive result.

Having made that statement, I think we have to move into the area that's much more difficult to resolve, and that is in the workplace where we have multiple exposures to many, many chemicals, where we have a difficult time sorting out those agents to be tested on a priority basis, how do we handle this situation? And indeed, is there anything positive that one can say, short of the classical epidemiological approach.

Obviously, the prevention of cancer, and more importantly, chemically induced genetic abnormalities, which is a topic that unfortunatly we have not talked about in any great detail, is contingent upon our ability to identify and prevent human exposure to those chemicals that are mutagenic and/or carcinogenic. In the most ideal situation, we would like to continually monitor workers by relevant, short-term procedures that could identify potentially harmful products or combinations of products long before clinical symptoms appear.

In terms of hazardous industrial substances that we have identified, and most of them in recent years, I'm sure we would agree that vinyl chloride, styrene, asbestos, dibromochloropropane, benzene, epichlorohydrin, ethylene oxide and radiation represent some of the more potent hazardous industrial substances.

These hazardous materials have been identified by a variety of procedures, including some long-term epidemiological studies. It might be of interest to briefly review some of these materials that were identified as carcinogens and/or mutagens.

Most of you are perfectly aware, I think, of the DBCP, the dibromochloropropane case, where indeed here we had the situation where workers got together and found that they were unable to conceive, and that led indeed to an intensive study where we found that most of the workers either had oligospermia or aspermia, and the interesting point here is that that information was available since 1961 and it was only last year that the evidence surfaced. In 1974, a group of investigators from the National Cancer Institute found that indeed dibromochloropropane induced stomach cancer in animals, and in spite of all the information that was available in the public literature, in the open literature, it was totally disregarded until the workmen got together and found that they could not raise a family.

And the final story on dibromochloropropane has yet to be written, because we find in those workers indeed that did have sperm, that the sperm had abnormal morphology, and additionally, they were genetically abnormal. And one of the important things that I think we should stress, we talk about chemicals in a workplace, but let's remember that most of the chemicals in a workplace simply represent an exaggerated exposure of what happens in the general population.

We could go on and talk about vinyl chloride, but again I'm sure that most of you know the vinyl chloride story. Let me only add one thing here,

which I think is rather important. In the case of vinyl chloride, risk estimates were made on the basis of a rare liver tumor, angiosarcoma. The real problem with vinyl chloride, as we now see, may be in CNS tumors, and the risk estimate that were made may be a tremendous understatement of really what does occur. And this is one of our problems in risk estimates.

And I can talk to you about a number of examples, but I want to make the following points. Point number one, the reduction of cancer and genetic hazards in the workplace is contingent upon our ability to identify these agents.

Two, within the last few years several industrial chemicals, specifically the ones that I have enumerated, have been identified as hazardous in the area of chronic toxicology.

Three, our present identification of these compounds have been haphazard, nonsystematic, and in many cases the result of accidental findings.

A final statement that would be hard to contest is the fact that there are many, many chemicals in the workplace to which significant numbers of individuals are exposed that are yet to be identified. In fact, those few industrial agents that we have characterized as being carcinogens or mutagens, in all likelihood represent an insignificant amount of the total number of substances that are carcinogenic or mutagenic, and this has been emphasized by one of the previous speakers.

What we really need is a set of procedures that will, with a high degree of accuracy, allow us to identify potential carcinogens and mutagens. The utopian approach to this problem would be to have a number of accurate, economic tests that could be conducted in man, would not pose

any dangers to the human subjects being tested, and where the results would become available in a short period of time. In the best of all worlds the results should serve as an advance-warning system where we can take remedial action before any clinical symptoms appear.

I have just described in very general terms what would be the ideal situation -- that is, the ability to quickly and accurately detect chemicals in the workplace that are potential carcinogens or mutagens, long before we see any neoplasms. I suspect some of you may be surprised if I tell you that at this moment, with the capability -- we have the capability to do just that. All the chemicals that I referred to in the beginning of my presentation -- vinyl chloride, asbestos, DBCP, ethylene oxide, styrene, epichlorohydrin, radiation -- could have been detected in the workplace using modest size exposed groups and suitable controls. I am not talking about the conventional epidemiological studies with all their insensitivity and problems. At the present time there is information in the literature attesting to the fact that all these chemicals could have been detected in relevant, short-term, human studies.

What are these procedures? Let me briefly describe these tests. The premiere procedure for evaluating adverse effects of chemicals in a human population is cytogenetic studies looking at chromosomal abnormalities. This technique, using sufficient numbers of cells and sufficient numbers of exposed and control groups for chromosomal abnormalities, is probably one of the most powerful tools we have for evaluating high-risk groups. The importance of chromosomal abnormalities and a relationship of cancer in man can be appreciated when we realize that many human cancers appear to arise

from a single cell. Often the cell has one or more chromosomes differing in morphology from any of the individual's non-cancerous cells. Almost every known mutagen and carcinogen in animals has been shown to produce chromosomal abnormalities. The evaluation of chromosomes of workers for chromosomal abnomalities is simply a very simple procedure. All you need is a cytogeneticist, a light microscope and 5 cc's that you've drawn from the employee.

Another procedure that can be used concurrently with the cytogenetic end point, and again, is extremely simple, is the analysis of body fluids. Here we look at urine and/or blood for the presence of genetically active chemicals. This procedure has again been used to detect hazardous drugs as well as industrial chemicals.

A third procedure that can be incorporated into our battery is the evaluation of sperm for genetic and abnormal morphology. Indeed, in the case of dibromochloropropane, in exposed workers where sufficient sperm were available for evaluation, genetically defective sperm as well as abnormal sperm morphology was found.

One of the most important points about this battery of tests, such a cytogentic studies, is the fact that a number of known hazardous chemicals have been detected, but to my knowledge we have no confirmed studies on false positives. That is where we have found something to be positive in the short-term human studies, these have been important chemicals that have been shown to be hazardous by other techniques.

Well, these tests can almost be considered, I think, diagnostic for the presence of hazardous materials in the workpalce. They serve as

advance-warning systems for chemicals, much as a radiation badge tells us that we are in the presence of harmful radiation. And with the radiation badge we find that these effects, again, occur well in advance of clinical symptoms. We don't have to use the trite expression, waiting to count dead bodies. Truly these are advance-warning systems.

The utopian procedures that I talked about earlier in my presentation are already with us. We have the capabilities at this moment of detecting hazardous mutagens and carcinogens in the workplace. In fact, that can be instituted as part of a medical surveillance procedure in industry. The most obvious question then is, if things are as great and as good as I said they are, if we do have these procedures, if they are available, why aren't we doing it?

I would first like to address some of the reservations that industry has raised about using these procedures for monitoring their employees. The usual allegation made after a positive finding by the manufacturer of a suspect chemical is that these proce · · are merely research tools and we are not sure as to how the results should be interpreted. The response to this is quite evident. Can we think of other procedures that have unerringly detected adverse chemicals in human studies without false positives, as these procedures, specifically cytogenetics, have? From both a mechanistic and applied standpoint, these procedures can be described as relevant tools for detecting hazardous substances in man.

It seems quite ludicrous to me that Dow Chemical has been using this technique for the past 12 to 15 years, and during this period of time has publicly stated on how advanced they were in monitoring the safety of their

workers by these procedures. Cytogenetics was porclaimed as a research tool by Dow Chemical Company last year, only after epichlorohydrin and benzene were found to induce chromosome abnormalities in their workers.

Another objection that has been raised about these procedures is the fact that positive findings could lead to all sorts of medical-legal problems with the workers. Certainly nobody could fault industry for their failure to detect hazardous substances in the past, when the methods for this kind of study were not available. It is quite another thing, however, to say that we will not use these procedures now because we are afraid of the medical-legal implications, when this is weighed against protecting the workers from any further exposure to the chemical. It would seem to me that from a moral and legal standpoint industry would be held accountable for not using these procedures and informing their workers, rather than for not doing the study.

I refer to the fact that Dow Chemical has been monitoring their workers for the past 12 to 15 years. I might say that Dow -- and this is referring to the Freeport, Texas, facility, where there's approximately 7,000 employees -- did have a model program in terms of industrial monitoring, by these short term tests. All the problems, such as informing the employees of the procedures, the implications of the findings, were successfully addressed by Dow. Employees were continually informed about these procedures. Results were made known to them and there was, to my knowledge, and this is also information that one can verify with the past medical director of Dow, that very little employee-management problems were encountered.

It was only after the program really paid off, and by that I mean when they actually detected those agents that the program was geared to detect, and that is within the last year, that Dow suddenly decided that this was not a worthwhile program. Indeed, they are no longer carrying out the same kinds of studies that they've been doing over the past 12 years.

I might add that this program was a model program for other industries to follow. Some of us who have been associated with the Dow program over the past decade must now seriously ask ourselves was this simply a public relations stunt rather than any serious intent of management to take action on the basis of the results, when the results warranted such action.

It is interesting to note that many of the European countries, specifically the Scandinavian countries, are now rountinely carrying out this type of monitoring in their industrial facilities, and some of the data that I referred to in the very opening portion of my presentation has been generated by these overseas studies.

The bottom line is obvious. Given the procedures that we now have to safeguard our employees from the exposure to hazardous materials, does industry really want to do it? And more importantly, what role, if any, will our regulatory agencies have in seeing that such a program is implemented. Too frequently we come before a group and we talk about our great research findings and what's on the horizon or what we hope we can do in the future. What I've tried to say to you right now is that we do have procedures that need implementation, and that these procedures are probably as good as anything we have in the field. Thank you.

(Applause)

DR. SAFFIOTTI: Thank you very much Dr. Legator. We have been asked to limit the coffee break to five munutes, so that we can resume with the next talk. So we'll try and reconvene at quarter to 11:00.

DR. SAFFIOTTI: Let me introduce the speakers for the second part of this panel. The next speaker is well known nationally and certainly to those of you here in Chicago, Dr. Samuel Epstein, Professor of Environmental Health -- isn't it? At the School of Public Health, University of Illinois. Author also of a book called, The Politics of Cancer. The topic that Dr. Sam Epstein is going to discuss is, in fact, entitled "The Politics of Cancer." It's a wide topic for which I hope he'll use a little time.

DR. EPSTEIN: Dr. Saffiotti, ladies and gentlemen, I should mention that there is a possibility which I can't exclude that I might take up more than my 15 minutes allotted time. If I do this it will only be because Irving Selikoff told me that he had some time to spare from yesterday which he didn't use up.

I'd like first of all to congratulate OSHA on having put together a balanced program, in fact of having leaned over backwards to assure adequate, fair and reasonable representation of all concerned and interested viewpoints.

I should mention that the text of my talk is available -- or rather was available, I believe there are no more copies at the moment, but there will be some more copies this afternoon in the pressroom.

Now, I propose to discuss with you briefly the issue of the politics

of cancer, with particular reference to the inflationary impact of failure to regulate.

We're now at a very critical phase of American history. Technology is proceeding apace, and at the same time the regulatory agencies are crumbling against -- in the face of the combined assault of the Council on Wage and Price Stability and industry. These are serious times for America. The possibility exists that we might save pennies today at the expense of bankruptcy in the future. And this is an issue which I propose to deal with you.

It's interesting that we're faced with a paradox of a liberal and Democratic administration with some agency heads of unparalleled skill and integrity and professionalism, who are achieving less and who are likely to achieve still less than their predecessors during previous Republican administrations. It is an interesting paradox, ladies and gentlemen.

Senator Kennedy, in the last decade, has been warning with increasing vigor, of the likelihood of subversion of the democratic decision-making process by special interests. Environmental cancer in general, occupational cancer in particular, are supreme manifestations of such subversion.

A critical element in this subversion of decision-making, and on the assault against the regulatory agencies, is and has been the role of industry. And I would like now to start off by discussing with you what has been the past role of industry strategies and what is the present and evolving pattern of industry strategies.

But before doing this, I feel it's important for me to share with you some personal credos which will underline the rest of my discussion.

My first credo is that I believe in the superiority of the free enterprise system. I believe in the immense potential of modern technology for resolving conflicts between economic growth and public health considerations. And I believe that, furthermore, that crises will escalate and continue to escalate inevitably, until some consonance has been developed between societal and long-term industrial interests.

There are ciritical needs now for top management to seize initiatives and in develolping such consonance between these interests. There is a need to avoid future and massive polarizations which are inevitable unless industry does reappraise its strategies.

Let us now briefly consider what have been the past strategies of industry, and let us now, subsequent to that, take a look at the strategies that are evolving.

The past strategies of industry have been blamed on the concept of denial of risk. Risk does not exist, or risk is minimal. And inherent in this overall rubric has been a complex of different elements, the relative emphasis on which differs in different forms, different adjudicatory proceedings, different circumstances.

But let me go through some of the elements. The first and the most important element is blame the victim. If somebody gets cancer it's his or her fault. They are hyper-susceptible. They're ethnically undesirable. They eat too much fat. They spend too much time in the sun. And factors of this kind. In other words, a shift or responsibility from industry to the individual.

In parallel with that is an emphasis on the need for biological

monitoring. Let us look at any one individual and see if he's getting early cancer. If he's getting early cancer, we'll do something about it. Let us see if the individual is getting lead poisoning. In other words, emphasis on biological monitoring of the individual rather than on environmental monitoring.

The other elements of course are to minimize the hazard, and part of minimizing the hazard is to say if you get experimental data in animals indicating the future hazard, let us minimize this and let us insist on the need for long-term prospective epidemiological studies.

At the same time as we talk about minimizing the hazard, the remarks you've heard from Mr. Lang this morning on occupational cancer fit into this superbly. Industry has always insisted that occupational cancers are somewhat under 5 percent of the total incidence of cancers. And at the same time, industry has refused to make available exposure data on what workers are exposed to what substances in this country. In fact, the credo of the Chemical Manufacturers' Association is the worker has no right to know to what they're exposed to in the workplace, because this may give vital trade secret information on trade name products.

Now, the National Cancer Institute, the National Institute of Environmental Health Sciences, National Institute for Occupational Safety and Health, put together a document which was released in September '78, which indicated that up to 38 percent of cancers in future decades could be ascribed to occupational factors. Like industry, I believe that this is a misleading document, although for different reasons. I think this is a misleading document because it seriously underestimates the impact of

occupational cancer. The estimates from the government source related to asbestos and five other known carcinogens. It ignored radiation. It ignored 20 other epidemiologically proven carcinogens. It ignored approximately 200 or so carcinogens shown to be active in animal systems. It ignored the spill-over of carcinogens from the chemical industry to the outside workplace. It failed to recognize the fact that current epidemiological studies are based largely on large industries as opposed to small business, where levels of protection and degrees of protection are far less adequate, in fact if they exist at all. And it also failed to recognize the fact that most epidemiological studies are not based on lifetime expsoure. So, like industry, I fault the government document, though for different reasons.

Now, of course, how did industry react to this document? It proceeded to attempt to do a series of patch jobs, and one of the most interesting elements that surfaced was the rural Stallones-Downs story. The AIHC contracted with Stallones and Downs from the Texas School of Public Health basically to do a hatchet job on the document. Stallones and Downs, consultants to the industry, however, came up basically saying, "We agree with the results of the government document. We agree with the findings of the government document." What did AIHC do? By some remarkable oversight, they failed to include the Stallones-Downs document in the post-hearing submissions of record to OSHA.

The other element to the industry strategies are to maximize the utility and the efficacy of the product, and to say this is a unique societal product, we can't do without it. A good example of the

fallacy of nonsensical nature of such claims is aldrin an dieldrin, chemicals produced by Shell, pesticides produced by Shell, persistent organo-chlorine pesticides, for which, even in court at suspension cancellation hearings at EPA, Shell was unable to produce evidence of the efficacy of aldrin and dieldrin. Which incidentally everybody in this room has aldrin and dieldrin in their body fat, .1, .2 ppm kind of levels. but Shell was unable to demonstrate any evidence of the efficacy of dieldrin, because, the overwhelming insects against which dieldrin were used, had been resistant for over a decade. Where's the trade-off?

I could give you many other instances of such questionable efficacy. The other elements of course are maximizing the difficulties of cost of compliance. When we talk about the costs of compliance, when industry talks about this, we're really dealing with, I think, almost an area of legerdemain, of sleight of hand, and I'm going to give you a very specific example of how the game is played.

In 1974, when OSHA was getting ready to promulgate the 0 to 1 ppm vinyl chloride standard, industry had economic impact analyses done by Foster D. Snell and Arthur D. Little, firms who are still producing estimates on costs of compliance, which the Council of Wage and Price Stability for some reason takes seriously, and the estimates of course were predictable. If you have the 0 to 1 ppm standard, somewhere in the region -- it's going to cost the country $92 billion and 2.2 million people will lose their jobs. I thought, good Lord, perhaps we should lose a few thousand workers. It's just not worth it, you know, 2.2 million jobs and $92 billion. That's a hell of a lot of cash.

In fact what happened? Let me start off backwards. The VC standard, the 1 ppm standard, was introduced in April of 1975. The VC-PVC industry is enjoying an unprecedented boom, but let's follow the sequence of events after April of '75, when the standard was established.

Within six months B. F. Goodrich had come into compliance at a capital cost of $35 million, not billion. Six months later they were making money by leasing their compliance technology. Nine months later the plastics industry increased the price of its plastic products, complaining that an unresponsive and oppressive government had forced this increase because of regulatory costs which it was passing on to the public.

The other elements to the industry strategies are exhausting the agencies, insisting on protracted, case-by-case examination, which is the familiar tack of the American Industrial Health Council. Let's debate this issue. Let's take it to court. Let's tie up the agency for one, for two years on this one specific issue. Let's paralyze and insure that, in fact, they're unable to act in other areas.

The other elements are propagandizing the public, to wit the multi-million dollar misleading advertising campaign of Monsanto, assuring the public, synthetic chemicals are safe, unless they're mishandled, at the same time Monsanto rushing Cycle Safe bottles into market with acrylonitrile in them, before having completed the tests on acrylonitrile, and when FDA found 20 parts per billion in Coke sold at retail, Monsanto takes them to court, saying, "Why are you concerned about small levels of acrylonitrile?" Twenty parts per billion, ladies and gentlemen. Let me explain to you what it is. That means that a bottle of Coke, you'd

have 10 to the power of 18 molecules of acrylonitrile. It means that in every cc that your child drinks, there will be 10 to the power of 40, quadrillions of molecules of acrylonitrile.

Now, the other elements of course take me to the area of Watergate-ism. In the course of the last 15 years, working for Congressional committees, for the media, for regulatory agencies. I've been imvolved in the detailed analysis of the data base of industry in a wide range of products, consumer products, insecticides, industrial chemicals, what have you. In my book I document example after example of criminal acts ranging from suppression, distortion, manipulation, destruction of data. I could -- in fact if time and your interest permitted, keep you here for the next 24 hours and go through case-after case-after-case and cite to you chapter and verse of such criminal acts. And in my book I document these in great detail. I name the industries, name the companies, tell how the game is being played. And many of these games are still persisting.

The unwillingness of Dow Chemical to release the data on the cytogentic effects of benzene and epichlorohydrin while at the same time, in 1977, while at the same time industry was maintaining there's no evidence at all of any adverse effect below 10 ppm. Dr. Olson, of course, was one of the gentlemen who was maintaining, look, there's absolutely no evidence of any adverse harm below 10 ppm, so why worry? I'll come to you in a moment, further, Dr. Olson.

But be that as it may, we're dealing with a series Watergate-isms and white collar crimes which sould be more appropriately discussed under that

rubric, rather than under the rubric of science. These are issues of Watergate-ism.

Let me now turn to the evolving strategies of the industry, because these evolving strategies of the industry represent somewhat of a more sophisticated approach than the old blunderbuss approach, which to a certain extent depended on maintaining information secret, on cozy relationships between industry and regulatory agencies, between some things which are elements of the past, I hope.

Now, the new strategies of the chemical industry are stimulated by various developments, including the revelations on the misleading or fraudulent data base of industry. The emergence of a small cadre of activist scientists who scientifically cannot be easily challenged, and at the same time are not entirely shy about making their views heard, and also the emergence of some outstanding new appointments for agency heads. But also, and most critically, the national mood for deregulation and anti-inflation. So, ever sensitive to the changing national mood, the new stategies are swung in to play, are based on the acceptance of risk as a trade-off for the benefits. And I'm going to come to that more in a moment. But essentially, is the debate is now being shifted, from the scientific debate in agencies, to Congress, the courts and COWPS -- Council on Wage and Price Stability. Now, let me just very briefly talk some of the problems of cost benefit analysis. Incidentally, I would agree with the views expressed by Donald Kennedy, the Commissioner of the FDA, that cost-benefit analysis is a premature science fostered by national economic pressures, and in this particular case it's being expolited by industry

to maintian a self-serving status quo.

Now, the most important point about cost-benefit analysis is that industry has the ability to swing into operation an enormously powerful lobby to prevent or reduce compliance today because of the alleged high costs. But we the public, the workers, the consumers, do not have a lobby to adequately express our concerns of the high and inflationary costs 10, 20, 30 years from now, from failure to regulate. So the impact of compliance falls on one small segment of the population, namely industry, the economic impact, but the economic impact of failure to comply impacts massively on all citizens of our country.

Now, let us talk first of all about the benefits of regulation, and let us then consider the costs of regulation. When we talk about the benefits of regulation, the most important benefits of regulation are the prevention of delayed costs of failure to regulate, in terms of disease, in terms of death, and in terms of environmental degradation. Now, there are substantial uncertainties in developing such estimates, and first of all, it's difficult to make quantitative projections from animal data, and there have been some extraordinarily facile attempts to make estimates as to how many humans are going to die from introducing material like saccharin in the market, for which we have animal data, to try to estimate from there how many people are going to die. Now, interestingly, when you take the animal carcinogenicity data on saccharin and apply standard methods of risk estimates -- the Mantell-Bryan type of approach -- with different estimates you get something like 10 million fold of variation in the numbers of anticipated human bladder cancer deaths. In fact, there isn't any real

scientific basis for using animal data to develop quantitative inferences as to loss of life.

And as far a human data is concerned, when you do have epidemiological data it is possible to develop some kinds of estimates, which is in fact what the NCI-NIEHS-NIOSH document did, and which in fact is partly the reason for the anger of the American Industrial Health Council and for some of the extraordinary misleading propaganda that gentlemen like Mr. Lang seem capable of serving you.

Now, let us also talk about some of the other savings from the -- as benefits of regulation. Now, the recognized costs of disease in this country, let's briefly talk about the recognized costs of disease. Total national health care costs now are somewhere in the region of about -- in 1979, are somewhere in the region of about $190 billion, which is about 10 percent of the GNP, which is more than 55 billion more than Defense.

Now, of the money we spend on treatment of health care in this country, which is about $50 billion, less than 4 percent is spent on prevention. In fact, we spend less than $200 million a year on all areas of cancer. In fact, health costs lead the inflationary spiral in this country, and it's interesting to contrast the runaway hospital costs in spending with, in fact, the massive resistnace of industry to regulation on the environmental and health level.

Now, as far as HEW estimates go, the recognized direct and indirect costs of cancer are somewhere in the region of about $30 billion a year. These are direct and indirect costs. As I document, in my book an elsewhere, these estimates ignore -- these are just the tip of the iceberg.

They ignore the so-called externalized costs, which I will briefly mention to you in a moment. But when you top up the externalize costs, the costs which are generally discounted, are not recognized, you're dealing with costs which exceed $100 billion a year.

Let us go through some of these externalized costs. The NIOSH document, "The Right to Know," published in 1977, made it clear that the costs of surveillance of workers who, in that past, have been exposed to the 14 regulated carcinogens is somewhere in the region of about 8.5 billion. This excludes costs of monitoring of up to 2 billion a year. This excludes costs of physical examination of 230 million. And so on and so forth. The amount of money spent in this country on workmen's compensation massively underestimates the true impact of occupational disease. The Love Canal situation. The product liability. The third-party suits. The medical malpractice suits. When you total all these things up you realize that the 30 billion recognize costs are the tip of the iceberg.

Now, so much for the benefits of the regulation. In other words, if you do regulate now how much money are you going to save in the future. Let's just briefly look now at the costs of regulation. The costs of regulation, as I mentioned before, tend to be immediate. And these estimates also involve substantial uncertainties. But the Council on Wage and Price Stability uses industry estimates as the basis for its proposed actions. The industry estimates are generally of the same self-serving nature as the vinyl chloride example which I gave you, and neither COWPS nor OSHA have the resources to examine in great detail these estimates. In fact when COWPS took the data from AIHC on the costs of regulation, generic

regulation of carcinogens, the Foster D. Snell costs, the same gentleman who gave you the $92 billion estimate for vinyl chloride, COWPS admitted that these estimates were seriously flawed, but nevetheless recommended that these estimates should be incorporated in the decision-making basis.

Now, these estimates also ignore the positive externalities of compliance, such as the add-on devices, such as the existence of alternative technologies, of product and process substitution. For instance, when you talk about regulating benzene, if indeed industry can make a case of regulating benzene down to 1 ppm or lower is expensive, then there are alternatives. The Italian shoe industry, for instance, got rid of leukemia in its works by substituting toluene for benzene. It isn't a question of leukemia versus starvation, which is the industry line. There are alternatives. There are process and product substitutions.

There are also substantive economies to be gained from recovery and recycling. Also, the growth of the pollution control industry, which provides good services and employment is growing at more than twice the rate of U. S. industry.

I mentioned the fact that unfortunately most of our data now on costs of compliance come from a self-serving, flawed source, and as yet the regulatory agencies do not appear to have developed an adequate data base on this area. And I think you also have to contrast the industry positions, the exaggerated emphasis on the costs of compliance in health and safety, with their insistence of regulation where corporate interests have to be protected. To wit, the protest of the trucking industry when threatened with deregulation. To wit, the protests of the American Medical

Association on behalf of the medical industry, when recommendations were made that doctors should be allowed to advertise. And so on and so forth.

Cost benefit analyses -- just two more minutes -- cost benefit analyses raise important questions of equity. On the one hand you have to balance the immediate small cost of powerful and small segments of society against delayed and greater cost to the public without organized lobby. And the risks which the public are expected to bear and the costs are of an in-voluntary nature.

Now, I want to end by doing two things. To give you some flavor of the kind and the quality of advice which industry gets from its consultants, and the kind and the quality of advice of information presented by such consultants at judicial and regulative hearings. Let me quote to you from the gentleman who's going to follow me, Dr. Olson, when testifying before -- on the question of the benzene standard.

Dr. Olson was one of the industry witnesses and who submitted a 17 page testimony, a quarter of which was devoted to listing his own academic achievements, and Dr. Olson, in the course of this testimony made it clear that he was under the impression that the literature -- this was on the vinyl chloride, on vinyl chloride, benzene situation -- he was under the impression the literature had established thresholds for carcinogenic effects. And I quote. "The carcinogen, vinyl chloride, shows clear-cut threshold behavior in both animals and man. The threshold for tumor induction by vinyl chloride in animals is 10 ppm. The concentration at which hepatic levels were not depressed and there were tumors observed. After 25 years of observation, doses of vinyl chloride in the air of

approximately 2,000 ppm in industrial plants have been shown to cause tumors in man, as levels below 200 ppm have not." In fact, we have ample evidence on carcinogenic effects in animals and humans way below 10 ppm. But be that as it may, stranger still was Dr. Olson's belief that benzene could not be regulated as a human carcinogen. And listen to this, "Because human experience hadn't been validated by animal experiments." He said, well, now, look, it's true you've got suggestions of leukemogenic effects in humans, but we haven't demonstrated it in animals. And I quote, "In my opinion benzene cannot be called a primary carcinogen because no cancer has been demonstrated in animals after benzene exposure." Et cetera.

Now, I'd like to end by quoting, if I may, from a well known American radical. "I hope we shall crush in its birth the aristocracy of our monied corporations which dare already to challenge our government to a trial of strength and to bid defiance to the laws of our country." Thomas Jefferson, 1816. Thank you.

(Applause)

DR. SAFFIOTTI: The next speaker on the panel is Dr. Robert Olson. Dr. Olson's presentation was added to the program. Dr. Olson is Professor of Biochemistry and Professor of Medicine at St. Louis University School of Medicine. He has a Ph.D. biochemistry from St. Louis University, M.D. from Harvard Medical School. He's presently a member of the Food and Nutrition Board of the National Academy of Sciences. He's published extensively in the area of environmental factors in health, and his title is, "Science and the Determination of Public Policy." Dr. Olson.

DR. OLSON: Thank you very much, Dr. Saffiotti for your intro-

duction, and thank you, Dr. Epstein, for your introduction.

The issue of benzene pathophysiology can come up in the discussion if you'd like to ask either of us further questions about this.

Now, I'm a medical doctor engaged in the practice of internal medicine, which includes the care of cancer patients. I'm also professor and teacher in a medical school, and hence carry out both animal and clinical investigations. As has been mentioned, of the effect of many chemicals upon the health of these species.

Now, as a medical doctor I am most concerned about the fact that cancer is the second major killer of Americans, taking 400,000 lives per year. No medical doctor takes the burden of cancer lightly. It is a major killer. It is a disease in which the molecular biology is still unclear, but certain very specific causes have been identified in the environment. Now, much research is being carried on at the present time to clarify these areas of ignorance. The National Cancer Institute budget for the next year will approximate one billion dollars.

Now, it has been stated that up to 80 percent of human cancer is related to the environment. And I think that statement has to be taken in the context that the environment includes the food we eat, the water and alcohol that we drink, the air we breathe and the consequences of social intercourse. I think in developing a public policy from scientific evidence, that which exists, it's very unreasonable to try to develop exaggerated claims about one segment of the environment versus another.

Now, in this particular seminar, the focus is on environmental health and cancer in the workplace, and there have been many estimates which

have been made by qualified epidemiologists and investigators, about the segment of cancer mortality which is caused by the workplace. These estimates have varied from one to over 40 percent. In fact, Dr. Epstein has just told you that the estimate documents of the National Cancer Institute have actually underestimated the constribution of the workplace to this epidemiology. If we keep expanding the percent from each segment of the environment, we will soon approximate about 300 percent.

But in any event, public policy must be determined by a confluence of people in government, in the public, in the scientific sector, and in the regulatory agencies. As a scientist, I'm certainly not one to insist that scientists determine public policy, but I think as a working scientist, it is my duty and responsibility to be sure to emphasize the fact that good science has to underlie the determination of public policy. And I think extravagant claims, unfounded, criticized by peers in the respective areas of scholarship, about the incidence of cancer in the workplace are not contributing to our solution to this problem.

Now, it has been emphasized by -- there is a controversy, let me put it that way, in this seminar about whether there is an epidemic of cancer. But going back to the public health statistics that are available to all of us, those provided by the National Cancer Institute and by the American Cancer Society, it's hard to find evidence in our total population, including the working force of 90 million people, that there is, in fact, an epidemic of cancer generally in this country.

The epidemic that exists is an epidemic of lung cancer, a form of cancer that was very rare in the 1920's and 30's, now becomes the leading

cause of cancer in males. We know that the rate of lung cancer in males is now declining slightly. The rate of lung cancer in females is still rising, and that has been, I think, convincingly demonstrated to be the result of cigarette smoking.

Now, as regards the estimates document that the National Cancer Institute generated on September 15, 1978, a paper, the senior author of which is Bridbord, and included many of the outstanding scientists at NCI, has been roundly criticized by many peers in the field of epidemiology, including Sir Richard Dahl of Oxford University, Dr. John Higginson of WHO and even Ernest Winter of the American Health Foundation, who pioneered as a medical student at Washington University, across town from us, in identifying cigarette smoking as a cause of lung cancer in men.

The Lancet said on December 1978, "It is sad to see such a fragile report under such distinguished names." Now, contrary to Dr. Epstein, I think the estimates are exaggerated and the assumptions are based on the worst case, the case that doesn't exist, for example, that of the 11 million shipyard workers exposed to asbestos during the war, four million were heavily exposed and that this exposure's going to create an epidemic of 75,000 cases of asbestos-realated cancer per annum of the next 20 years.

Now, mesothelioma is a marker for asbestos cancer. It does not affect the lung. It affects the pleura and the peritoneum. The estimate from this kind of statistic of mesothelioma incidence is 20,000 cases per year. The actual observed number is 1,000 cases. We also know that cigarettes, cigarette smoking, as Selikoff showed many years ago, is a powerful co-carcinogen for asbestos, or it may be synergistic as a carcinogen

with asbestos. So that if smoking was eliminated from asbestos-exposed workers, the incidence of lung cancer would drop to practically twice not ten times the incidence from asbestos alone.

Now, the case of vinyl chloride is also interesting, because this is used as an example of industrial neglect, and I think it reflects more industrial ignorance of the problem. The NCI report says there were two million individuals in this country exposed to vinyl chloride and calculates the expected fall-out from that kind of exposure not only of angiosarcoma, which is a very rare form of tumor of the Kupffer cell, but from other tumors that have been mentioned here today.

Actually the NIOSH report says that 4,000 workers were excessively exposed to vinly chloride. So I don't think this report has helped the cause of occupational medicine or regulatory agencies, because it's a clear exaggeration of the dangers of the workplace. That's not to say that the workplace is not dangerous for some individuals. But it doesn't help the cause of public health to exaggerate the risk.

Now, other dangers in the environment, of course, exist. I've been concerned in the Food and Nutrition Board by evaluating the contribution made from the American diet, which has been estimated to account for some 25 to 30 percent of cancers. Now, the diet, of course, is composed of both nutritive and non-nutritive components. There are thousands of non-nutritive components, as well as the major biochemicals that keep us alive in the American diets.

Some of them are known to be carcinogens. For example, aflatoxin, which is the product of a mold that contaminates peanuts and corn and

grains to a certain extent in this country, to a larger extent in Southeast Asia, is one of the most powerful carcinogens known. But the public doesn't hear about that. Nor does it hear that the FDA recommended limits on aflatoxin contamination of peanut butter is 20 parts per billion, a level that will cause tumors in mice.

So I think putting things into perspective, including the danger of pyrolysis of tryptophan, say, in barbecued meat or the role of polyunsaturated fatty acids which are recommended for the control of serum cholesterol but in fact have been shown to be co-carcinogenic in rats exposed to dimethylhydrazine these ideas have to be also promulgated.

Now, how do we deal with the dietary problem? At the moment it requires more research, but one thing we know, that obesity, which can be regulated by the control of energy intake, is an important risk factor not only for cardiovascular disease but for certain kinds of cancer.

Now, my view is regulation is necessary. But over-regulation is a bane and is as inflationary as Dr. Epstein thinks the lack of regulation will be in the -- in 2080. I applaud the activities of the Interagency Regulatory Liaison Group, which Dr. Saffiotti mentioned earlier today, which has been grappling with the problems, the initial OSHA document and other documents forthcoming from any regulatory agencies, to try to move toward a program which will include animal testing, will include short-term tests, will include epidemiologic data, not prospective studies of workers now exposed, but the total evidence in man that a certain environment is toxic, and we'll conduct risk-benefit assessments, which I don't think is a subterfuge of industry, but is a necessary event that we conduct every day,

in our lives.

Now. this document, I think, moves toward a conciliation. I do not think government, industry and the academic community should engage in confrontation in attempting to solve problems as important as the one being discussed these two days here in Chicago.

Who suffers from these, from mistakes made in the area of regulation? Not the agencies. Not industry, not the academic community. It is the person that suffers. And the equation is how do we solve the problem of regulatory intervention which is costly and which taxes the individual versus the appraisal of genuine public health risks that impair his health? I think our charge is as difficult as that of Ulysses, to sail between the straits of Scylla and Charybdis. It will require skill and judgment.

(Applause)

DR. SAFFIOTTI: Thank you. The last panelist on this program is Dr. William McCarville, Director of Environmental Affairs, Corporate Environmental Policy Staff of Monsanto. Dr. McCarville has a career in research chemistry. As a research chemist he has been in the Monsanto Company in various positions for many years and will speak on the topic of wisdom in the workplace. Dr. McCarville.

DR. McCARVILLE: Thank you, Dr. Saffiotti. I came here this morning to talk to you about some myths, some myths and some facts. Now, Dr. Epstein was kind enough to furnish a couple more that I hadn't planned to talk about, but as a representative of Monsanto I can't pass them by. They're not pertinent to today's topic, but if you would like some facts on the chemical facts of life program or on the cycle safe bottle, see me

after this meeting or any of the other Monsanto representatives here, and we'd be delighted to talk to you about them.

The myths that I did come prepared to talk about have been pretty widely quoted in the popular media, while the facts have been equally well circulated in the medical and scientific literature, so while I'll try to keep my comments non-technical, I do have copies of my remarks that are annotated to the pertinent technical literature. I believe there are some on the back table. There are some downstairs at the AIHC pressroom.

While much of the discussion this morning has been about cancer generally, I would like to limit my comments to the narrower theme of this panel, cancer in the workplace, and because of the time constraints, I'll limit my discussion to just a few key topics, to several ideas that we hear and read about almost daily which really have little or no basis in fact. I want to say at the onset that the health of our workers and the safety of the workplace are of the utmost importance to industry. But in order to give our best efforts to insuring that health and safety, we need to be clearly aware of what are the real problems and what are simply myths.

First, I challenge the implication and the title of this conference. In answer to the question across the front of all the conference material there is no occupational disease epidemic. Nor is it an epidemic of cancer in the United States.

As others have pointed out, the age adjusted incidence rate for all cancers in this country has remained nearly constant for the past half century. There have been striking increases, however, in respiratory tract cancers, almost certainly because of smoking, but this is contrasted by

dramatic decreases in stomach cancers and cancers of the uterus, for reasons we frankly don't understand.

But the rates of incidence of most other cancers have remained virtually constant. In fact, if cancer were eliminated tomorrow morning; the life span of the average American would be increased by about 1 1/2 to 2 years. By contrast, if we were to eliminate all cardiovascular disease, the life span would be increased by seven years.

Stated in simple terms, cancer is a major disease, and it is important that we learn to prevent and to cure it. But cancer is, by no standard epidemic. Now, even if there is no general cancer epidemic, some say there still could be an epidemic of cancer in a small population, such as the workplace, but the facts argue otherwise.

Again, I will challenge your program invitation which says that each year 100,000 Americans die from workplace exposure to chemicals. This estimate comes from a government report published seven years ago. It used other studies of the ratio of violent to nonviolent deaths in underground metal and uranium mines and in smelting plants, that indicate that there were about seven nonviolent deaths for every violent death.

The report went on to claim that there were 14,000 violent deaths each year in the entire working population. So there must be about seven times as many nonviolent deaths or about 100,000. Now, there are three obvious flaws in all of this. First, the U.S. National Center for Health Statistics said that in 1972, the year in which the report I referred to earlier was published, that there were 5,700 violent deaths in industry, from all types of workplace associated accidents, not 14,000.

Second, the report assumed that all nonviolent deaths by everyone who works in industry are caused by exposure to chemicals. But there has never been an occupational group study in which most of the deaths were work related. So even if there were 100,000 nonviolent deaths per year among workers, most would have to be considered non-occupational and non-chemically related.

The third flaw is the extrapolation to the entire work force based on three occupations that are more than usually hazardous. This example of "worst case" reasoning is the same as assuming that everyone always drives at 100 miles an hour, since most automobiles are capable of that speed. If this were the case, the projected deaths from automobile accidents would be huge, but in fact we're dealing with a real world situation where everyone doesn't drive 100 miles an hour, and the actual number of deaths is a lot lower.

This same commonsense rule should be applied to studies of the workplace. Otherwise, we find ourselves living with seven year myths being quoted as facts. The real workplace fact is that the incidence of cancer for workers is about the same as it is for the rest of the population. The workplace is not a major cause of cancer.

We've heard back and forth about what percentage. I choose to say that it's probably less than five percent in my paper documents, some sources from which I come to that conclusion. Now, there have been instances of irresponsible inaction by industry when problems do exist. This is inexcusable. But I think it's almost as irresponsible to overreact to an issue that is not a problem. In fact, the emphasis that has been

placed on workplace cancer in recent years may actually have obscured other issues in the fight against cancer.

For example, the marker cancer for vinyl chloride monomer exposures have resulted in a total of 24 cancer cases in the past 40 years in the United States. Now, rightly so this has caused much concern about the workplace as a cancer factor. But compare this with the fact that 80,000 to 100,000 people die each year from lung cancer, and society has taken no steps to ban cigarettes, one of the major factors.

Another statement we hear all the time is, because the chemical industry has essentially grown up since World War II, we have yet to witness the true effect of workplace exposure to carcinogenic materials. The idea is that the epidemic is yet to come -- since cancer has a latency period between exposure and onset.

Now, chemicals have been around for centuries. Chemical research in an industrial sense began nearly 400 years ago, and most of the major commericial chemicals we know today have been in production for nearly 40 years. Thus, chemicals should have caused a significant rise in cancer rate long before now.

Some years ago this latency period was put at 20 to 30 years. More recently the estimate became 30 to 40 years. And an article published a few weeks ago put at 50 years. If the estimates go much higher we'll be discussing the incongruous situation where the latency period extends beyond the expected life span.

Now, the latency argument is interesting, we know that, in the real world, whenever you give statistics for large groups of people you're

talking about averages. In the case of a large-scale exposure to a toxic chemical, if the average latency period is 30 years, some people will not show reaction for, say 50 years. But others will be affected much sooner, say in five to ten years. But we haven't seen this happen either.

Another myth that I hear and read about all the time is that industry just doesn't really give a damn about what happens to its employees, so long as the company makes money. On the contrary, responsible industry has always been concerned with workplace safety and health. The chemical industry, for example, routinely handles materials which are explosive or toxic, or both. Perhaps because of this the chemical industry has one of the best safety records of any industry.

Now, today, as a society, we face another kind of concern, chronic health effects, such as cancer and cardiovascular disease. Now, unfortunately my industry has also found some workplace chemicals with adverse chronic effects -- vinyl chloride monomer, asbestos, and a few others with less recognizable names. These are now carefully controlled, as are about 30 other potential human carcinogens.

Now, actually, our safety record has been maintained in this area as well. The most recent government report ranks the chemical industry 12th in terms of cancer hazard -- far down the list compared to other industries with seemingly less potential for problems.

Another myth, and this is one which is most unfair to the American worker, is that most chemicals cause cancer. Again, this is patently untrue. In all, we know of about four million chemicals. Of these, about 45,000 are in common use. There are a few hundred suspect carcinogens,

those which had positive results in animal testing but no known human effects, and there are about 35 known human carcinogens. and this includes both natural and man-made substances. Thus, only a tiny fraction of the chemicals we have discovered are known to cause cancer in people or are even suspected of doing so.

Now, in the workplace there is very little exposure to the known carcinogens; and where that exposure does occur it's very strictly controlled. Another aspect is that much that we know about chemicals and their potential to cause cancer has been learned with the help of industry. Industry is a major source of money and technical knowledge for understanding suspect carcinogens in the workplace. We are spending our resources and using our technical knowledge to learn about the effects of chemical exposure and understanding how our chemicals work.

One example of the chemical industry's concern is the formation of the Chemcial Industry Institute of Toxicology, a not-for-profit research organization which is supported by industry, but which works autonomously. CIIT has a twofold purpose, to learn about the effects of chemicals which have been around for a long time and are widely used throughout industry, and to develop new chemical testing techniques, which will be more efficient, effective, and less expensive than existing tests.

Now, so much for the myths. Now I'd like to turn to what is the biggest problem facing responsible industry today. And that is knowing how to deal with suspect carcinogens. That is, materials which have not been proven to cause cancer in human beings, even though they may have produced adverse results in laboratory animals. These cases must be considered on

an individual basis for the following reasons.

First, some laboratory tests are more conclusive than others. Tests in laboratory animals are considered to be more reliable indicators of potential human carcinogenicity than short-term tests that measure a chemical's ability to create bacterial mutations. A test done in only one species of animal is usually less reliable as an indicator than tests in several species of animals. But these tests are expensive and range in cost from several thousand to several hundred thousand dollars each. But I think more important is that the number of qualified experts to carry out these tests simply are not available in sufficient numbers any where in the world.

Second, the number of people exposed to a material also is important. If adverse effects are predicted for one person in 100,000 exposed, and only 100 are exposed, the odds of resulting illness are very nearly zero.

Third, the material itself should be considered. Solid materials generally present less of an exposure threat than gasses, or other volatile substances. Some materials may exist in a closed vessel only for a few minutes or even seconds in the course of a chemical reaction, as intermediates between raw materials and finished products. In these instances there is virtually no exposure at all to workers.

All of these workplace factors -- and others -- must be taken into account in dealing with suspect carcinogens. Consideration must be given both to the hazard involved and to the potential effect of restriction or withdrawal. We, of course, should not put price tags on human health or life, but neither should we needlessly encumber our workplaces, strangle

our economy, or confuse and worry the public. And perhaps the last is most important.

Clear, obvious hazard must be dealt with summarily. Suspected and undemonstrated hazard must be dealt with in a prudent way that insures the health of the worker. And industry must continue to learn as much as we can about the materials we manufacture and use.

Now, this is no idle comment. I can only speak for my company, although I believe other companies in the industry are doing similar things. At Monsanto, we have nearly 900 people working full time in the area of health and safety. This year alone, my company is spending close to $73 million in this area, and this doesn't count capital investments. If you threw in capital investments, the total number would probably be about $160 million. But going back to the $70 million figure, to put it in perspective, this is an amount equivalent to more than 20 percent of our net profit.

Now, we've all seen irresponsible manufacturers whose actions have damaged the reputation of all industry. But there's a great difference between negligence and ignorance. To know of a problem and not act responsibly is frankly inexcusable. But it seems to me that to cry wolf based on insufficient evidence is also wrong. As I said earlier, industry is spending millions of dollars to conduct research on its raw materials and products, to learn what effects materials will have, and why.

Now, finally, I'd like to offer an invitation to the news media representatives who are here today, in fact to all news media representatives. Come visit our workplaces and our laboratories.

Talk to our people. Call us with your questions. Talk with those concerned with the issue until you get the facts. We in industry do care about our workplaces, for the sake of our workers, for the sake of our companies, for the sake of the public that owns our companies, for the sake of our consumers and for the sake of our economy and our way of life. And anyone who says that that's not true or prints that that's not true is wrong. Thank you.

(Applause)

MR. FOSTER: Thank you very much, gentlemen. Because of the time constraints we'd like to ask that if any of you have questions you get together with the panel participants on a one-on-one basis.

(Group response - "No.")

MR. FOSTER: No? Okay. First question.

MR. CASTLEMAN: My name is Barry Castleman. I have a question for the gentlemen from Monsanto. I've been interested in Monsanto's overseas operations ever since they stopped making vinyl chloride and PVC in the United States, about five years ago, while expanding abroad. Acrylonitrile was make by Monsanto into Coke bottles and these were being sold in the United States up until data came out showing that acrylonitrile was highly carcinogenic in rats. This was followed by epidemiological data from Du Pont, showing that acrylonitrile workers were getting cancer. And OSHA came down also with standards. At this time Monsanto had to write off about $50 million on the acrylonitrile Coke bottles. My question is while Monsanto is appealing the OSHA tenfold reduction in workplace standards in the United States, what sorts of levels of exposure are there in Monsanto's oversease acrylonitrile plants?

DR. McCARVILLE: Well, first of all there are several things all mixedup there together. The Coke bottle and the acrylonitrile standard had nothing to do with each other. Number two, Monsanto is not appealing the OSHA standard on acrylonitrile.

MR. CASTLEMAN: You have not challenged that in court?

DR. McCARVILLE: No, sir. We are, for the most part, well on our way within the framework of time allowed to us by OSHA of getting to the two part per million standard in all of our operations. In the UK we're presently approaching three and heading toward two.

MS. LABBEY: Yes, this question is directed to Dr. McCarville and Dr. Olson. My name's Doreen Labbey. (phoenetic) I'm a member of the Steelworkers' Union. Now, I'm a welder at the coke plant at U.S. Steel, Gary Works. Now, I feel that the question of the hazards of the workplace are not exaggerated, but in fact, underestimated. At the coke plant at U.S. Steel, the only place where workers are protected against the hazards are on the batteries, because that's the only place where standards have been established so that they can judge how much of the particulates are dangerous to people. So even though in distillation, where there's fumes and gasses, many of which are discussed here today, standards have not been established, so workers are not protected. In coal handling, where there's often a haze of coal dust, so that you can't see across the room, standards also have not been established, so workers wear no respirators or any protection. I believe that black lung will be the result of that kind of exposure. Where I work, in what they call a preheat, the coal is heated before it goes to the battery. I am exposed not only to welding but a combination of gasses, oxygen deficiency, hot coal and coal dust, and no

standards are established for that.

Now, you're talking about my life when you talk about peanut butter and social intercourse, and that scares me. The only thing I can do, I feel, is to recommend that the people I work with and myself leave the coke plant, transfer to other parts of the mill, because I don't see any thing being established. Now, how can you answer that question?

(Applause)

DR. McCARVILLE: Well, first of all, I'm not sure what the question was.

MS. LABBEY: The question is how can you say that things are exaggerated or it's something that's in my life? I don't smoke and I eat very little peanut butter, but in fact I think my job is very dangerous to me, and I don't like the idea that you are trying to convince the press here that in fact it's exaggerated, that in fact things are very nice out there in the workplace, when in fact it's much worse. They haven't even done anything about the combinations of hazards that, for instance, I, as a welder experience. Nobody even knows this.

DR. McCARVILLE: Well, in terms of regulating the level of exposure in workplaces, I can really only speak for the chemical industry, and really only for my company. But I know this, that we have many, many workplaces that are well below any regulation from OSHA or, in the absence of OSHA, from the TLV's established by the other groups.

DR. OLSON: Let me just say a word about the issue of exaggeration. I think no medical doctor would take a position that there shouln't be excellent industrial hygiene, sound occupational medicine and research into modern methods, some of them mentioned today. The question of

chromosome cytology and better appraisal of toxicologic effects of chemicals in modern industry. I mean I can't speak to the point that you are raising, but what scientists have to do is to examine the data which is available from all segments of our environment that may contribute to the cancer problem, and try to make a prudent judgment about the risks.

I mean, I'm certainly not one to say that industrial plants are not risky. The issue is how risky. And it's my impression that occupational medicine has been damned as being totally inadequate when it's been working on these problems for some time. Of course there are exceptions, there are violations. But nonetheless, to declare that occupational medicine as part of industry in the United States has been totally remiss in the workplace is, I think, not right.

Also, I'm convinced that occupational medicine is very nervous about the risks present in its plants, plants of its companies, and that the companies have nothing to gain by ignoring risks to workers.

DR. EPSTEIN: I'm impelled to make a very brief comment on the question of data which was triggered off by the last question, and also, Dr. McCarville's reference to the Chemical Industry Institute of Toxicology as a source for good data for industry.

One of the most seminal issues in this whole area of occupational exposure is the fraudulent data base of industry, as I've indicated before. Dr. McCarville was given an opportunity on the Today Show to answer some very specific allegations I made about white collar crime, involving destruction, manipulation, distortion, suppression of information. Dr. McCarville was silent on the matter, but today he referred to the Chemical

Industry Institute of Toxicology as providing a reliable safety data base for the industry.

I want to tell you briefly about the Chemical Industry Institute of Toxicology because this will give you a flavor of exactly where it is. The Chemical Industry Institute of Toxicology was created in 1974. Until recently, this Institute which was headed by Leon Goldberg, a professional consultant of the chemical industry for many years, had subcontracted most of its testing to a local laboratory called Industrial Bio-Test in Northbrook, Illinois.

Now many of us had followed up the activities of Industrial Bio-Test for many years, because it had tested thousands of industrial chemicals -- food additives, pesticides, toxic chemicals -- and on April 12, 1977, a team of federal inspectors arrived at Northbrook, Illinois, and next morning, they approached the Industrial Bio-Test labs, knocked on the door, and Mr. Frisk, the President of the company, opened the door, and said, "Gentlemen, I'm terribly sorry, we accidentlly destroyed all of our records last night!"

Now, thousands-upon-thousands-upon-thousands of industrial chemicals, pesticides, food additives, feed additives, drugs, the data base was deep sixed, just eight hours before the team of federal inspectors arrived to take a look at them.

That, Dr. McCarville, is what you call the data base of industry? The Swedish government has already banned pesticides tested by Industrial Bio-Test. And on the grounds that the data weren't worth the paper they were written on. The same obtains for so much of the industrial data base.

(Applause)

DR. McCARVILLE: Dr. Epstein has made a great generalization there, which of course, is not true.

For example, work done by Industrial Bio-Test has been validated to the satisfaction of the U.S. Government, the Japanese government, governments of western Europe -- not all of it -- I admit that there may be some very questionable data there, but the preponderance of the data generated in support of product registration has been validated by independent toxicologists, pathologists, not associated with industry.

DR. EPSTEIN: I have personally reviewed the GAO documentation on the so-called Industrial Bio-Test validation studies, and suffice it to say that I believe that in the overwhelming majority of instances, the lack of data, the absence of data, the absence of laboratory records, the fact that we know that animals were changed from group-to-group, the data was manipulated and changed, there were additions and deletions -- this, to all intents and purposes, I believe, has rendered any inferences developed from the Industrial Bio-Test to be regarded as extremely suspect.

DR. McCARVILLE: Well, since this conference wasn't designed to discuss Industrial Bio-Test, just let it suffice that I disagree with him.

MS. SHINOFF: Okay. My name is Mary Shinoff, and I'm from the Public Media Center. Part of my job -- the majority of my job consists of informing labor unions, health professionals and the general public regarding the toxicity of various chemicals. This is directed to the Monsanto representative, primarily. Yourself and the gentlemen from the AIHC have expressed a desire for a well-informed public, castigated the press for irresponsible reporting, hope that they would mend their ways in

this regard, and I'm a little bit confused on this, because as Dr. Epstein and previous speakers have mentioned, one of the major problems in identifying what the problem is, is access to industry-held data on the toxicity of chemicals, access to medical records, and you have also stated that there is no occupational disease epidemic.

If these things are the case -- if you want a well-informed public and you think that there is not an occupational disease epidemic, why not release information to the public about what you know about the toxicity of chemicals that are manufactured in the chemical manufacturing industry, and also, what kind of epidemiological data the industry has generated of itself.

DR. McCARVILLE: Thank you. Well, first of all, about the toxicity of the chemicals which we manufacture -- every chemical that we manufacture and ship out is accompanied by what we call a Monsanto Chemical Safety Data Sheet in which the toxicology, both acute and chronic, are given as well as the acute hazards that might result from an explosion or a fire or whatever.

In terms of the epidemiology reports, Monsanto has been and is involved in a number of epidemiology studies, and every epidemiology study which we have completed, we have published, and that is our policy, and we intend to continue with it. We will publish in the literature every epidemiology study we carry out.

MR. AMBERG: My name is Matt Amberg, and I'm with the IUE -- the International Union of Electrical Radio and Machine Workers, as a writer, and I have as one of my continuing assignments, had to write in the field

of occupational health and safety.

We represent workers in a number of sub-branches of the electrical and electronics industry, as well as chemicals, plastics and so on -- we even represent workers in one of the plants of Monsanto. Indian Orchard, Mass.

I'd like to make a couple of observations about some of the things that have been said here. In the first place, there was a study a couple of years back at Research Triangle for NIH, or for NIOSH, I believe, which did show the chemical industry as being somewhere in the neighborhood of 12th ranking. But the point of that study and the point of that ranking was that they were not measuring the volume of the chemicals which were being processed, but rather, they were ranking the amount of the chemicals to which workers actually were exposed on the job, and therefore, some of the other industries, including electrical, electronics, instrument making -- that was, I think, the top ranking one, were ranked higher in terms of hazard to the worker because of the fact that the worker was in more intimate contact in those industries with the chemicals that were made, of course, by the chemical industries -- they were using these. They were the customers, you might say.

In the second place, I'd like to point out that I have been talking to people from various of our locals, and I find that too often the case is that the workers in the plant are using these chemicals and haven't the foggiest notion of what they're handling. I was talking to the president of one of our locals in Massachusetts who told me that it's a sort of a plastics operation there, and they make all kinds of products, and they run through products and processes with thousands of different chemical

compounds, and the workers know these compounds merely by job number. They don't know a thing about what they're handling.

So if you are sending out data sheets, and I'm sure you are, and I'm sure Du Pont is, and I'm sure Dow is and so on -- these data sheets are not going to the workers, they're not going to where the workers have access to them -- they're going to the employers, and I think that we would probably feel a good deal more confidence in the bona fides of the chemical manufacturing industry if, instead of opposing labeling regulations by OSHA, you are to be pushing for OSHA labeling regulations which require that every worker be made aware of all of the chemicals and the other agenices or agents, which are used in the plant.

And, then I'd like to ask whether you think there is any correlation speaking about this epidemic question -- whether there is any correlation, or any significance to a correlation between where the chemical and chemical-using industries and petrochemical industries are in the United States, and those counties or those statistical areas which have the highest incidence of cancer rates.

DR. McCARVILLE: Well, first of all, to the first statement that you made, sir, these data sheets that we send out with our chemicals are really public information. We furnish them to OSHA and others -- if you're interested in the data sheets.

MR. AMBERG: Do they go to the workers in the plant?

DR. McCARVILLE: Sir, I have no idea. They go with our product when it leaves, and our product is also labeled as far as the hazards.

MR. AMBERG: Do you ask OSHA to put out a standard or a regulation requiring that the employers tell the employees what is there, that the

employers must share with the employees these data sheets, or rather, do you oppose such a labeling requirement?

DR. McCARVILLE: We certainly would encourage our customers to share the information on our data sheets with their employees.

MR. AMBERG: I'm not asking about encouraging. There is a proposed standard, there is a proposed regulation which OSHA has been considering for some time, and the Manufacturing Chemists Association, as I understand it, of which you are a part, I believe, have opposed that kind of regulation.

DR. McCARVILLE: I think that proposed regulation you're talking about relates to labeling, and I think the reason for the opposition has been the conflict in labeling requirements between the various agencies. You'd have to have a window shade on every drum, and pull the label down in that fashion. The requirements under FIFRA, the requirements under TOSCA, the requirements under RCRA (phonetic).

MR. FOSTER: Thank you very much, gentlemen. Our next speaker this morning, and the last before the luncheon break, is Dr. Barry Commoner, who is going to speak on the topic, Environmental Hazards -- "Who Pays, Who Benefits?"

Dr. Commoner has been a member of the Board of Directors of the Scientists Institute for Public Information Activities since 1963, and became Chairman of the Executive Committee last year. He's been the recipient of numerous honors, including the (gap in tape).

DR. COMMONER: I'm enormously tempted to get into the battle -- and I'll just make a few remarks about some of the things that were said.

For example, Dr. McCarville pointed out that only a tiny fraction of the present chemicals in industry have been shown to be carcinogenic. That is a prime example of what I call the "Teller Principle."

Edward Teller once pointed out that if radiation caused mutations among human beings, then it should be true that there was a high level of mutations among Tibetans who are at a high altitude and heavily exposed. And he said no one has ever observed high rates of mutations among the Tibetans. Because no one had ever looked!

The point is, Dr. McCarville, most of the chemicals have not been tested for carcinogenicity, and I think it's very unfair of you to use that term as just a tiny proportion.

Also to say that chemicals have been with us for years. That's a little bit like saying that electrons have been with us for years. Does that mean we should stand up in front of a beta ray and get exposed, which is made of electrons? It depends on what the chemicals are and where the chemicals are tucked away in the structure of the molecule.

But now I want to talk about what I wanted to talk about. Actually, the point I want to make is that what we're witnessing here in all of these discussions is not really a scientific question. What we're seeing, I think, and I'm going to try to prove that, what I have to say -- what we're seeing is not a scientific dispute, but an aspect, a sector, of a social, economic and political conflict which is built into the system whereby we produce goods in the United States and distribute the economic gains.

In other words, what you are witnessing here is an aspect of politics. And, I'll make a further assertion which I will attempt to document -- that

the effort to convert this into an objective, scientific discourse is really a way of defending a certain political and economic position.

Well, now that I've gotten your attention, let me say why I think this is true. I think probably the most fundamental issue that's going to be decided, I guess, in the next year by the Supreme Court, hangs on the question of the benzene standards that OSHA has promulgated. And let me remind you what that issue is about.

Basically, OSHA has said, it is our job to do the best we can to reduce workplace health hazards, and we think the benzene standard ought to be reduced by an order of magnitude.

The court threw out that decision because OSHA, it said, did not offer a clear-cut estimate of the hazards against the benefits of benzene. In other words, OSHA takes what you might call an advocacy position -- and that's not surprising; after all, OSHA is in the Department of Labor, and it is my understanding that the Department of Labor serves the interests of workers -- and so OSHA takes the attitude that it is their job to protect the health of workers in the workplace.

Incidentally, EPA which you might think has the assignment of protecting the people who live in the environment, has not taken this attitude, and as you probably know, its regulatory procedure is rather firmly based on the cost benefit determination -- trying to reduce the costs and the benefits to dollars and then matching them off.

Now, what I want to say is this. And I think you saw the conflict between, shall we say, the advocacy judgment-making approach -- Sam Epstein won't mind if I say that that's heavily involved in his thinking about

it -- he wants workers to be more healthy, and he's working at it. There's a conflict between that approach and the notion that this is an objective, scientific business which can be determined by somehow evaluating the costs against the benefits.

Now, my thesis is this -- that a rigorous examination of the cost benefit theory shows that it involves social, economic and political value judgments, and that's what I want to try to demonstrate.

Now, to lighten the thing up a little bit, I'm not gonna talk about any horrendous workplace conflict, because you've heard a lot about that -- I want to take a very lighthearted argument that developed some months ago between the American Cancer Society and the Center for Science and the Public Interest. What happened was this -- the American Cancer Society, some of its branches, decided to raise money by selling lollipops, and lo and behold as the Center pointed out, some of those lollipops had red dye number 40 in them, which, let's just agree, there is some suspicion that it may be carcinogenic.

And they thought it was the equivalent to the Cancer Society raising money by selling cigarettes, you know?

And they chided the American Cancer Society, which came back and said that it's okay to use any additive until it's been banned. Now, very interesting question here. How do you evaluate the risk and benefit of red lollipops? A serious question. Now, let me go through it with you and do this.

The law, the NEPA law, TOSCA, where risk benefit is laid out, says this -- that the purpose of the evaluation, and I want to quote -- "the

benefits of a substance for a given use or uses, and the availability of less hazardous substances for the same uses," is what you must judge. In other words, you've got to judge the benefits of a particular use against the hazards resulting from that use. So let's ask -- what is the benefit and what is the hazard of red dye in a red lollipop?

Now let's simply agree that there may be some hazard from the red dye. It's not zero, okay? Now what's its benefit? Very interesting question. What good is the red color of a red lollipop? Well, you have to ask what's a lollipop for? Well, let's settle it and say it's to acquire some nutrition. Okay? There are other psychological things that are involved and so on, but, let's say that. Now the red dye contributes nothing to the nutrition. Therefore, I will assert that to the person who is sucking the red lollipop, the red dye contributes nothing. The benefit is zero, and there is a palpable risk.

Alright -- that's the person who is sucking the lollipop. Now, someone will come along and say, "But now, that's silly." Why do we use red dyes? We use red dyes because it makes the lollipop more attractive. And that's certainly, probably true -- I suppose red dyes, most people like red lollipops better than-what-blue ones, I don't know.

Well now, let's think about that -- is that a benefit? Well, it is. Indeed, it is, because if a manufacturer produces red lollipops, he'll sell more of them, and that's a benefit, because he makes more money. And so I want to come to a simple conclusion -- that the risk from the red dye is not zero, and it is delivered to the consumer; the benefit to the consumer is zero. There is, however, a palpable benefit to the producer of the red dye of the lollipop at no risk.

Now what I'm saying, then, is you've got to ask who gets the benefit and who gets the risk -- and in this case, if you're interested in protecting consumers, the benefit is zero and the risk is not zero. Now if you divide not zero by zero, you get an infinite value. And I suggest, therefore, that when the benefit is zero, no risk is tolerable. That raises an interesting question, now. Under what circumstances is a benefit zero? And one I've given you, you know, a trivial addition. Benefit to the consumer -- certainly it is a benefit to the manufacturer. People make money selling red lollipops -- you have to realize that.

Now there is another way in which you can reduce the benefit to zero, and that is by supplanting the product with something else; you know, many of you are aware of Section 102-C of NEPA, the National Environmental Policy Act. Next time you have the Act in your hand, read Section 102-D. Section 102-C sets up the basic cost benefit thing; 102-D emphasizes that it is the obligation of the government to seek out ways of improving the cost benefit by finding alternative products which are less hazardous, but yield the same benefit.

And so, for example, if these chairs here, which are upholstered in plastic, turn out to exhude carcinogens, you know, we ought to do an Ames test on the air in this room, it'd be interesting -- and leather will give you just as good a chair without exhuding carcinogens. Then, one of the consequences of a cost-benefit discussion is to replace the plastic with leather -- or to alter the way in which the plastic is manufactured -- which the workers might be interested in.

So what I'm saying is that the moment you go through a detailed cost

benefit anlysis, you immediately notice that the costs and the benefits are unequally distributed between economic and social sectors. The people who suck lollipops get one end of the deal, the people who sell them get a different deal -- and the same thing, of course, is true about the worker who is manufacturing red dye 40 and the manufacturer who is making a profit out of what he's doing.

Well, let me now raise another issue. What we've seen happening over and over again is the attempt to make these issues scientific, and the most striking example I know of I want to cite to you, you may remember it, I think it happened about a year ago.

Robert K. Phillips, the Executive Secretary of the National Peach Council wrote a letter to Dr. Eula Bingham. That was the time when the DBCP flap developed, causing sterility among people exposed to it, and he wanted to complain against the restriction of this pesticide in peach orchards. And he said that OSHA had overreacted to the hazard, the sort of thing you heard about here, and so on.

Then he said, "We do believe in safety in the workplace, but there can be good as well as bad sides to a situation."

Now, as Mr. Phillips who was quoted in the New York Times -- he also said the following, and I want to read this. This is a spokesman of industry who is using this toxic material. He said:

"While involuntary sterility caused by a manufactured chemical may be bad, it is not necessarily so. After all, there are many people now paying to have themselves sterilized to assure that they will no longer be able to become parents. If possible sterility is the main problem, couldn't

workers who were old enough that they no longer wanted to have children accept such positions voluntarily, or could workers be advised of the situation, and some might volunteer for such work posts as an alternative to planned surgery for a vasectomy or tubal ligation, or as a means of getting around religious bans on birth control ..."

Now I regard that as the most brilliant exposition of the cost benefit philosophy. You see, what he's saying is -- it's all a question of what you're gonna pay. You have to start figuring the cost of a vasectomy, right? The wear and tear on your soul of evading the precepts of your church and so on.

Now, you may say, well, that's, you know, that's an exaggeration, that's silly, and so on. Actually, what this reflects, and I think this is the key point that we have to discuss, actually what this reflects is precisely the position of the AIHC. The AIHC is saying that we've got to evaluate one risk against another -- in fact, you've heard statements here this morning, the risk of some particular chemical is far less than the damage that you do if you walk across the street. And the AIHC, and I want to just read to you their statement so we're not confused about it -- their big document which they prepared as a rebuttal to OSHA, made the following points. Remember, they had a table, and the table shows that the risk of a fatality or the probability per year of flying in an airplane is .0015% per year. The risk of a fatality from playing football is .004% per year, canoeing .04%, motorcycle riding 1.8% -- and then they say the following:

"Society has chosen not to prohibit any of these activities, or even activites with much higher risks. There are few activites which pose such

a high risk that society has banned them completely. For example, going over Niagara Falls in a barrel or committing suicide."

Now, if I understand what the AIHC is trying to tell us, it's this -- that since this span of risks is socially acceptable, all the way from you know, a fraction of a percent or 1.8%, the upper limit is 100%. You're not allowed to kill yourself -- that's 100% risk, and I guess going over Niagara Falls in a barrel is 100% risk. But somewhere between there and a 1.8% probability of dying in a year, is okay for chemicals or for a workplace hazard.

Well, what troubles me about that is that this is a violent distortion of the cost benefit philosophy, because what you are comparing is the risk of (a) with the risk of (b) without asking what are the relative benefits of these two activities.

So, for example, you have to ask -- why do people go motorcycle riding, and who takes the risk and who takes the benefit? There, it is precisely the same person -- presumably, the benefit of riding a motorcycle is to the rider, and the risk is his, plus some damage that he might do in running into somebody else.

But in the case of a chemical, for example, since that's what we're talking about, as I pointed out, the benefits may be zero to the consumer or to the worker, but there are always benefits to the manufacturer. And I want to make a very simple point, which I think helps clear the air.

In our economic system, anything that is produced is only produced because it has an economic benefit to the entrepreneur. Let's face it -- why does anybody make red dye or vinyl chloride, or anything else? They make it because they think they're gonna make money out of it.

So what you've got to face is that we begin this entire operation with the manufacturer committed to reap the benefits of a process which may or may not turn out to be risky to somebody else; in other words, that side of the cost benefit equation is built into the present economic system.

Now, I've told you that we can manipulate that by asking the question -- what is the benefit? But the benefits to be derived from what is produced are also in the hands of the manufacturer. You see, what I'm saying, is again, a very simple thing.

The "use value" -- the value to the consumer of what is produced is determined by the manufacturer.

For example, you buy a car and it's a lemon, the manufacturer made that into a lemon, not you. You buy a car which is a good one, and that is some decision that the manufacturer made. In other words, for example, since we're talking about chemicals, when Monsanto decided to massively produce PCB, even though in 1923 the first manufacturing plant in Anniston, Alabama, resulted in 23 of the 24 workers coming down with chloracne, and Monsanto knew for a long time that this was dangerous in contact with human beings.

And yet they produced massive amounts of it that ended up in the environment. They were engaging in an activity beneficial to them. And the risks began to be -- began to turn up elsewhere. The point I'm making then is that the question, the question of risk benefit is always a matter of --is always an aspect of the basic fact that in our society that which is produced, the way in which it is produced, the benefits that it will have or may not have to people is determined by a group in our society which, win

or lose, benefits from what it does, that is, industry.

I have just described what is known as capitalism. This is you know he who owns capital, he or she who owns capital, is free to invest it in making whatever legal product they're allowed to make. They do it for an economic reason.

All of the products that we are exposed to in the workplace and in the environment have been produced for an economic gain to the manufacturer. The manufacturer governs the balance between benefit and risk and who gets what. And the worker and the consumer stands helpless, waiting for something to happen and then asking OSHA and EPA to help, and then a huge bureaucracy has to be created which allows the manufacturer to say you're causing inflation. Now, what's the answer?

I think the answer's very simple. Clearly everyone knows that, when you manufacture something, there may be a wide range of ratios between the benefit and the hazard, and it would be a good idea to work that out in advance. Well, how do you work it out in advance? Who do you ask? Clearly, not just the manufacturers involved. The worker is involved, and so is the consumer.

So that if we had a sensible society, the decisions as to what is produced and the technique for producing it would be the result of discourse among the enterpreneur who owns the capital, the worker who provides the labor and the bodies that are exposed to the hazards, and the consumers who supposedly are going to reap the benefits and also get a number of the hazards.

In other words, the -- and incidentally, if you did that, you wouldn't

have to worry about all the bureaucracy. You know, when EPA was formed, some of us had something to do with this agitating people. The first day I stood on M Street and looked at those buildings, I said, my God, what have we done? The huge bureaucracy. Now, why was it created? It was created because the auto industry, for example, brilliantly produced smog-producing engines after World War II.

Wouldn't it have been better -- and then we all started doing research about smog and measuring and so on. Wouldn't it have been better if somebody had the wisdom to point out that, if you make a high compression engine that emits nitrogen oxides into the air, you're likely to get photochemical reactions that produce smog, so let's do it differently.

Then EPA would have not -- wouldn't have to do all this bureaucracy, wouldn't have all this worrisome thing. If, for example, it was decided in Monsanto, or in the U.S. Steel plant in Gary, among the entrepreneur, the worker and representation of the consumers what kind of goods really should be produced to maximize the benefit to everybody and minimize the risks. Then I dare say we wouldn't have the pollution that we've got now and the workplace hazards.

I've -- most of the workers I talked with, when we talk about hazards, it's a question of getting into the machinery and not being able to find a way of locking it so somebody won't turn the switch on, just a little thing like that. Wouldn't it be a good idea if the worker sat down with the engineers and said, look, design this thing in such a way that, when I get into the kettle, nobody can turn the damn thing on.

No, we talked to most industrial workers in a situation like that.

They've got their own lock in their pocket with their own keys. And sometimes they can't find a place to put the lock on to prevent somebody from turning it on. I mean, it's a simple example. I'm making a simple point, that what we are dealing with is a basic issue that confronts the country as a whole, and that is that the consequences of what we produce and how we produce it impinge heavily on the national interests, but it is at present controlled only by private interest designed to enhance profit. And I see no way of solving the problem that we have without recognizing that we're going to have to resolve this basic conflict by giving the workers and the consumers a say in what the producer does.

Thank you.

MR. COMMONER: Does anybody want equal time? Or do you want to go to lunch?

MR. FOSTER: If there are questions, we have time for one or two. If not, we'll reconvene at 1:30.

# THE GOVERNMENT ROLE:

# HOW IT WORKS

Dr. Eula Bingham
Assistant Secretary for Occupational
Safety and Health
U.S. Department of Labor

Dr. Anthony Robbins, Director
National Institute for Occupational
Safety and Health

Timothy Cleary, Chairman
Occupational Safety and Health Review
Commission

MR. FOSTER: ... going to be moderator first of the government role and how it works. He is one of the three commissioners who make up the Occupational Safety and Health Review Commission. He served as an attorney and policy adviser in all three branches of government. He's prepared a major handbook for non-attorneys on how to prepare for and argue cases before the Occupational Safety and Health Review Commission.

He's a member of the District of Columbia Bar, the American Bar Association, the American Association for the Advancement of Science and the American Public Health Association, among others. Mr. Cottine.

MR. COTTINE: Good afternoon, ladies and gentlemen. Since the early colonial settlement of this nation government has taken a public interest in the health of its citizens, for our human existence has depended on it. Thus, it has been both a traditional and essential exercise of fundamental government responsibility to preserve the health and welfare of this nation.

In the 20th Century this fundamental public interest has found expression in safety laws, workers' compensation statutes and the food, drug and cosmetic legislation, to mention only a few. In meeting its public responsibility, government has been called to investigate and research health hazards, to establish minimum standards of care, to enforce health hazards -- standards, to adjudicate the existence of a health violation and to determine abatement responsibilities.

In the central structure of the Occupational Safety and Health Act are vested the fundamental government powers which have characterized our constitutional republic since its establishment. Executive functions of investigation, research and training are vested in the National Institute for Occupational Safety and Health.

The administrative and enforcement functions of standard-setting in the workplace application have been assigned to the Occupational Safety and Health Administration. And finally judicial functions of independent review have been delegated to the Occupational Safety and Health Review Commission. The past responsibilities of our three panelists reflect a wide range of participation in government. The public health administrations of Dr. Anthony Robbins as Vermont's Commissioner of Health and as the Executive Director of the Colorado Department of Health; the biomedical research and investigations of Dr. Eula Bingham at the University of Cincinnati, the pragmatic application of scientific and biomedical data to the control of public health hazards by Dr. Bingham as the Chair of the OSHA standards advisory committee on coke oven emissions, the training and education of occupational health professionals by both Drs. Bingham and Robbins; and finally the law enforcement and adjudicatory responsibilities of Timothy Cleary as first a police officer in New York City, an attorney in the wage-hour division of the Solicitor's office of the U.S. Department of Labor and as chief counsel to the Commissioner Allen Burch of the Occupational Safety and Health Review Commission.

Each panelist today, however, has critical responsibilities and accountability to the nation for the effective protection of American workers and the essential preservation of their health -- Dr. Bingham as the Assistant Secretary of Labor for Occupational Safety and Health, Dr. Robbins as the Director of the National Institute for Occupational Safety and Health and Mr. Cleary as one of three members of the Occupational Safety and Health Review Commission, and most importantly since 1977, its chairman.

Without further elaboration of the panel's notable achievements and distinguished records of public service, let us proceed to their individual presentations. At the conclusion of all three individual presentations I will moderate questions directed to the members of the panel. Dr. Eula Bingham.

DR. BINGHAM: Now I know why I kept messing up the public address systems. I was coming down with a cold. You'll have to bear with me, and I hope that I don't lapse into a fit of coughing. If I do, you'll just have to let me recover and keep on going.

Kurt Vonnegut has said that a particularly American form of suicide is holding a steady job. I think that the Congress must have had that in mind when they passed the Occupational Safety and Health Act. I would like to emphaize the first part of the Act, which is--it assures, so far as possible, every working man and woman in the nation safe and healthful working conditions and to preserve our human resources.

I was reading a little blast that was issued by the Chamber of Com-

merce yesterday, saying that we had failed. A little bit later on I'll point out some of the reasons why I think we have failed.

I would first like to point out that the obligation for a safe and healthful and workplace is placed squarely on the shoulders of the employer, the person who owns the factory and takes home the profits from it. Now, in our Act the Occupational Safety and Health Administration has a number of mandates. One of those is to issue standards. Early on -- those of you in the audience who know all about this will forgive me, but this is a con-ference, seminar for the media, and I'm not sure they know about the history of our Act.

Early on -- there was a group of standards called the consensus standards, very specific in their nature, developed by industry groups, and we were charged, the agency was charged with getting on with the business of occupational safety and health and to take those standards and literally make them the first legal standards. The agency did that, I guess much to their sorrow.

They should have begun to go through those standards and take out those standards that were really irrelevant that made the agency the laughingstock and the butt of jokes in every newspaper and magazine in this country.

We have eliminated going through a rulemaking procedure a number of those standards, and we are methodically going through rewriting many of the standards. For example, the fire protection standard is in its final stages of being revised. It looks as if that standard will go from what 400 pages --down to something like 30 pages. It will go from being a

purely specification standard to a performance standard.

We're doing the same thing with the electrical code. But I would like to point out one thing. You heard individuals from corporations up here urging that we do turn toward performance standards, and I think this makes scientific logic; however, we serve more than the Fortune 500. Our standards cover small businesses. Those small business-men and women would like for you to tell them how to do it.

What we're trying to do is provide an appendix in those situations to the performance standard as a "how to" guide. So what is good for one company isn't necessarily the way to go for another one.

If you look at the Act, and focusing once again on standards, it says that standards for toxic or harmful physical agents shall be set which most adequately assure to the extent feasible, which is a very important word, on the basis of the best available evidence, no employee will suffer material impairment of health or functional capacity, even if such employee has regular exposure to the hazard dealt with for the period of his working life.

I would like to emphasize in addition to feasibility impairment of health or functional capacity. We're not talking just about deaths and whether it's 100,000 or 200,000. I'm not prepared to say, but I can tell you there are many people out there that are being made ill. There are people whose functional capacity is being diminished. Functional capacity, if you're a physiologist sitting out there, you know, would refer to maintaining adequate pulmonary function to lead an active and full life,

to be able to filter urine, so that you don't have to have dialysis, to be able to produce, whether a man or a woman, an offspring.

It is only in the past three years that we have begun really to deal with the health standards. There was very little activity before that, and while the course is long and slow and tedious, we have in the last two and a half years put out more health standards than had ever been issued by the agency previously.

I'd like to point out that our concern with health standards does not preclude a great deal of concern with safety standards. We still don't have an appropriate standard for confined spaces; that is, when workers go down into tanks with toxic fumes, we do not have appropriate standards. We do not have adequate standards to cover the refining industry for refinery turnarounds. We are working diligently on those standards.

In the area of enforcement, and I guess that's what our reputation has been built or gone down the tube on, it's very interesting. We have 1,750 inspectors. One thousand are safety inspectors. Seven hundred and fifty are industrial hygienists. We can visit two percent of the workplaces in this country in a year.

We have cross-trained inspectors, so that the safety inspectors can recognize some of the health hazards. But we go into very sophisticated workplaces, and I can tell you -- having been in the university for a long time -- a Ph.D. in industrial hygiene coming out will have a difficult time being able to be caught up on all the different kinds of processes that we

are called upon to look at and make judgments about during any month in a typical area office.

I guess what I'm saying to you is that we're going to be doing spot-checks. The word enforcement is perhaps a euphemism. We do spot-checks. We do, of course, issue citations, and we do provide penalties in some situations. But it is hardly an enforcement program, as some people have made it out to be.

There are many things that eat up the time of a compliance officer. It's been interesting for me here to see some of the disbelief on the faces of reporters, media individuals, and some of the individuals who have been here from industry who I think, would not believe some of the things, except I think they believe the workers who have come to the microphone and who have told about their experiences.

Well, would you believe me if I would tell you that there are places where there are explosions, that there have been explosions within the last six months, and we have gone out to investigate the fatality and have been turned away and asked to go obtain a warrant? And we do that. But it seems rather a remarkable event to me, and I'm not sure that the Supreme Court intended that that should be the way that we would deal with the death of individuals in the workplace.

I'm convinced that just issuing standards, and I don't discount them, and just making enforcement inspections will never solve the problem. And I guess after the first six months I was at OSHA I became quite depressed because it was clear that it took something else. I think the Congress

also came to this conclusion, and they urged upon the agency a consultation program.

We have taken that ball, and we've run with it. We now have consultation, free of charge, available in every state in the United States. The states run the consultation. The government pays 90 percent of it. There are a couple of states that have chosen not to come into the program. In those states we pay the full amount for the consultative program, and we have had it bid on a competitive bid, and a contractor runs it.

We give first priority to small businesses. It's clear from what Dr. Karrh said that Du Pont doesn't need our advice. There are some large corporations, though, that I think could use some advice, but certainly the small businessman or woman does need help, and we're there to provide it.

And you know, it's a fine, free service. It's something that every business in this country should take advantage of.

When I came to the agency, I looked at the educational program, and I guess early on somebody decided or they entered into a memorandum of understanding with NIOSH, and it was, the pie was sort of divided that we would do worker education, and NIOSH would do the education of the professional. Now, I suppose we have a little fringe overlap. I sure wouldn't want to deny Tony the opportunity to educate a few workers, and I hope he wouldn't deny me the opportunity to take on some young physicians as an internship in OSHA because they learn a lot in our place. But by and large it's divided up that way.

We were spending $1 million a year for the education of employers and employees in this country. Can you imagine that? I think it's a national disgrace. We now are spending approximately $8 million. There is an additional amount of a couple million in the budget, if we ever get a budget out of Congress this fall, that will provide us with more funds. But I think that this will provide perhaps the catalyst to make a real difference in the workplaces in this country. It is very important that employers, particularly small employers, understand the hazards of the workplace.

It is very important that all workers in this country have an understanding of the hazards. Workers must know the names of the chemicals they're working with. They must know the hazards that result from those chemicals, and they must know the precautions that are to be taken. They must know whether they have been exposed to the chemical. They must know when they have developed silicosis as a result of exposure to silica. It can no longer be hidden in a medical record in a doctor's office. It must be provided to a worker. It is just impossible for us to continue that way.

We have to inform workers as to what their rights are, as to what they're working with, and I think this educational program will provide that. The money is going to trade associations because they have a very important role to play. They reach many small employers that would never be reached in any other way. Many small employers belong to a trade association, so it's very important that we get this information out.

The money goes to labor unions to develop health and safety programs,

educational programs for their members, and I'm very sorry that we don't have here today an example of one of these programs. I have seen health and safety material developed by workers that is the best media I have seen developed by anyone.

Someone remarked to me a few minutes ago how articulate working men and women are. Well, it's their lives and they must become articulate. I guess that I became most impressed by this during the coke oven advisory committee hearings, the carcinogen hearings I was in, but we never listened to any workers.

But workers showed up at the coke oven advisory committee hearings, and they sat in the audience, and we would sit around the table and make very weighty pronouncements about how things were in a factory. Of course, we had industry representatives, and we had some union representatives, but they were, you know, fairly high up in the union and fairly high in the company.

And one day a comment was made concerning whether or not, when there was a spill of coals on the top of the charging oven, on the side after they had pushed a charge, whether or not that was ever cleaned up. And we went around the table, and I asked for information, and every body said, no, that was never cleaned up. That would be very time consuming, and it was just impossible to do that. Well, I could see the workers in the back of the room, in the audience whisper to each other, and I just knew that there was something going on back there.

So -- this was early in the proceedings -- I asked them if anyone in the audience had anything to say. And sure enough, an individual put his

hand up. And he said, we do that every day in our plant in Pennsylvania. And so the next day we had an issue. And sure enough, the workers were able to give us the straight answers. I don't think anyone at that table was lying. It's just that they didn't know what was actually happening on the shop floor, And you must listen to workers, because they know. Thank you.

(Applause).

MR. COTTINE: Thank you, Dr. Bingham. Our next speaker is Dr. Robbins, Director of the National Institute for Occupational Safety and Health.

DR. ROBBINS: Thank you, Burt. Eula, this is really a terrific conference, and I'm very glad that you've done this. It's an important group to talk to, and I guess I'm feeling this maybe more strongly than some because, as I look back at the almost ten-year history of the National Institute for Occupational Safety and Health, the thing that we haven't done is act as if our science is useful and relevant for the general public and for workers, and I hope that we're going to be able to change that. But it's not an easy process.

Burt started out by telling you how the OSHA law divides up the responsibilities -- and his description is quite correct. But it's also -- part of this law is quite unique. And I guess Senator Javits is either to be credited or to blamed for it, but what happened is that the -- that the research in recommending part of the law is not only separate from OSHA, but it's actually in a separate department of the Federal Government.

NIOSH sits in the Department of Health, Education, and Welfare, and

that obviously can have some great advantages. It either can produce some great independence and maybe some great leverage, or it could probably produce a great deal of irrelevance, if one wanted to. And I hope that the last several months have been an indication that OSHA and NIOSH are going to work closely together and that what NIOSH produces is going to be very relevant.

I'd just like to share with you some of my observations over the last nine months that I've been in this job and tell you that coming out of a public health background to run a research institute, it's been -- it's been very interesting.

We have, as Burt noted, a responsibility for research, but it's a little different than most research, in that it has one element that's terribly important because, like OSHA, which has right of entry for enforcement activity, NIOSH actually has right of entry for research and investigation purposes. And that, as far as I know, makes us quite different from any other research institute. It puts us in a position of going out and defining the problems and feeling confident that, if the information is there, we can go out and get it. And we're not necessarily dependent on the same kind of cooperation that has maybe slowed down some of the work that came out of the National Cancer Institute in NIH, where what you can do in the future is dependent in part on how controversial the results you produce at the present.

We also do training, and we have a service responsibility. We have a responsibility to do what we call health hazard evaluations. OSHA gets called in when someone thinks that a standard has been violated, that

workers are being harmed in that way. We get called in when workers seem to be sick, and yet nobody really knows what's going on. We get called in with a kind of chief complaint. He says, I don't know what I've got, but this is how I feel. Can you help me, doctor?

Well, that's pretty -- a close parallel to how NIOSH gets called on these situations by employers, by workers and occasionally by other agencies of the Federal Government. And we enter in a problem solving mode.

One such example is, we got called in to look at what some workers thought might be some excess deaths in the employees at John F. Kennedy Airport in New York. We started looking at the death records of employees who drove refueling trucks. But instead of finding an excess in cancer deaths, there seemed to be slight excess in cardiovascular deaths in this population. But that wasn't where the breakthrough came. The breakthrough came when we started to look at the work environment for the guys who drive the refueling trucks, and I guess you're all familiar with what these things look like. They're kind of a low-slung vehicle with the cab kind of scrunched down in the tank at about the same level.

But what turned out to be the case was these trucks had been very carefully designed to avoid any fire hazard because here they were transporting aircraft fuel, and when you looked at them, you found that the manufacturer had very carefully brought the exhaut pipe out right

under the cab. When the windows were closed, there was excessively high carbon monoxide levels within the cab.

So NIOSH had gone in on a request to look at what seemed to be a suspicious number of deaths and came out with what we think is a very clear problem and also very nicely a clear solution--don't bring that exhaust pipe out in that particular location.

One of the other problems I found on coming into this institute was that I had a large group of very good scientists who were very much on edge. There was something about being a scientists in an adversary world which was difficult. What they perceived, what they were experieneing was that every time they wrote a draft of a paper or something was being considered -- the first thing that they had to deal with was the lawyers from both sides of the issue, and they only got to deal with their own colleagues after they had provided all the lawyers with all the information that they wanted. And that's a tough situation to be in as a scientist.

And the way it got translated for me was we're trying very hard to be neutral. And when you probed a little bit, it was even tougher than that. It's not that they only wanted to be neutral, but they also felt that they were being expected to do the balancing, that they were calling the shots between management and workers, that thay had to take into consideration all of the issues, the economics, the feasibility as well as the health and science. And this was really very difficult.

I've tried to go back to the law then say to them, you know, you're not neutral. You're working within an institute that was created by a law that is a law intended to protect workers. And you need make no apologies for the fact that you're working on the behalf of workers. You're trying to tell the people of this country what needs to be done in order to make workers safe. So let's get out of this situation of acting as if we're neutral.

We will be often in opposition to management. We will occasionally be in opposition to unions. But we should feel pretty clear that, when we've taken a position about health issues, we are representing the interests of the workers. I think it's made it a little bit better, but the government environment for doing science is not always easy.

If you extend that problem, one of the other things about occupational health is that government financing of occupational health research is relatively small compared to the amount of research financed by corporations. Add to that the fact that the whole field of occupational health research is really very small. It's relatively new, we have trouble attracting people into this field. You can't necessarily interest a dermatologist in studying occupational skin disease, though we try. We have a problem: do we have enough independent university-based research. So much money for research has come out of industry in this field, that a lot of the people have trouble defending their positions because they are

in some sense, tainted by those for whom they have done research. I face this problem all the time.

Let me mention another thing that NIOSH is into. It turns out that NIOSH is not strictly a research operation, that there is one area where we are regulatory, and that is in the area of personal protective equipment.

For two kinds of personal protective equipment, for respirators and for coal mine dust samplers, we actually approve this equipment and say that it meets certain standards, and based on that approval OSHA and the Mine Safety and Health Administration allow this equipment to be used in the field.

I guess I didn't realize how much of a problem this was or how little attention had been given to this in the past until three firemen died at the end of March in Lubbock, Texas. And we were asked a couple of weeks later by the Lubbock Fire Department to take a look at whether the respirators that they were wearing, which incidentally were not a NIOSH-approved type, had been responsible for the deaths. And they sent us these respirators. And when we looked at them, they were in lousy shape. They had been taken apart and put together several times. I guess the final conclusion is we didn't know whether or not these respirators had been part of the cause of death of these firefighters who died without any burns, without any trauma.

But the next thing we did was we went out and sampled this same kind of respirator with the same kind of valve. We looked at about 200 of the respriators as well as these Scott Air Packs and Scott Pressure Packs

and found that about ten percent of them that we looked at had serious major defects.

These were respirators that were out in the hands of fire departments who depended on them, and the worst of the defects was one that reduced the safety factor of this respirator from where it was a protection factor of 100,000 down to a protection factor of 100.

And then we really had a problem, because when we asked the company that manufactured them, their best estimate was there were between 200,000 and a quarter of a million of these respirators in the hands of fire-fighters and general industry around the country, and that these workers depended on them. They were used in emergency situations, particularly by firefighters, where you couldn't follow the usual NIOSH wisdom, which is don't use a respirator at all if you can engineer the problem away. And we had a major public health problem on our hands and no method had been developed to deal with it.

We didn't have a recall system as you have with automobiles or with drugs or with food products. We didn't have a notification system, how to get to all the workers who had these. To make it worse we didn't know the mode of failure. We didn't know whether they were failing at the time of manufacture, during storage or during use. We didn't know exactly what to tell the workers, whether to go on using them, whether to inspect them. It was a very difficult period.

Four or five months later, now, the Scott company has finally come up with a retrofit kit, a fix on the problem, and they have agreed to replace all of the malfunctioning parts, and NIOSH now knows that we have to take a

look at our whole program. It's really very much more complicated than that.

As you are told by industry again and again, industry is terribly opposed to government regulation. Well, we're in a strange situation where the strongest advocates of NIOSH approval and regulation for respirators comes from the respirator manufacturers. We have created for them a very wonderful and artificial market situation which protects the status quo. We may also be stifling innovation in this field. We make it very hard for a new kind of respirator to be approved.

And it's been a very interesting experience for me. We are now reviewing our whole personal protective equipment program to assure that it is really meeting its original purpose, which is to protect workers. It's not entirely clear that it's been having that desired effect all the way along, certainly not as much as it should have.

And you can't necessarily do it in a voluntary way. For the last three years NIOSH has reported that over half of the brands of eye-cup safety goggles failed to meet the standard. They shatter when a steel ball is dropped on the lens, and yet it happened in '77. We reported the results. The same kind of results in '78. And now this is the third year in which we have reported back to the manufacturers, when their particular goggles don't meet the standard. Things don't seem to be changing.

And so it's not clear that we can rely on a voluntary approach. The whole area of standards is very important, and it's probably a good area for NIOSH to be in an independent position.

We have often provided OSHA and the Mine Safety Health Administration with research indicating when standards ought to be updated and

how they ought to be updated. I think that this is a useful and important pressure to be kept on the standard-setting and enforcement part of this government, to assure that the standard are kept up to the quality that they ought to have, and are really doing the job.

On the other hand, we've done a lot of our standard-setting research, our recommending research in a rather strange way, and this is what I wanted to mention. The problem that a research institute has when it has to do its work on contract -- contracts have been mentioned at various times during this meeting--about this result or that result produced by our contractor. It's a very tough problem.

One of the things that we've done under contract is produced the things called criteria documents, the formal recommendations to OSHA on what a standard ought to be. And I had an interesting experience when I met with one of our larger contractors, the Stanford Research Institite, and it was an interesting meeting.

I asked my secretary before this meeting -- I guess in the first couple months I was on the job -- I said, what's this meeting going to be about, because it had been on the calendar for a while. She said, don't worry; it's just a courtesy call. They're one of our big contractors, and they want to meet you.

And it really did have that quality. I sat through about ten minutes of this presentation, and I was handed this year's annual report and last year's annual report and some other things that came out of SRI. And I frankly was getting kind of bored with this meeting, and -- but I had a serious concern, and I had a concern about what a group like -- a

private for-profit company was doing, how they were doing research and what their biases were, and I said to them, I know you serve many people and do research in these areas. You deal with -- you deal with us. You deal with industries. Occasionally you deal with unions. And how am I sure that your interest in business in the future isn't affecting the results that you give us or, I guess, how your other customers are sure that your interest in doing business with us isn't affecting your objectivity in dealing with them.

And the answer I got back from, I think, a vice president at SRI, he said, well, we have a firm rule at SRI which is that our senior scientists aren't allowed to talk to each other.

(Laughter)

Now, that's a strange way to do science, and it's part of the problem that I've perceived at NIOSH, which is that when we do research on contract, we're left maybe with a well-educated and developed contractor, but very little of the expertise stays within NIOSH, and after we've developed some recommendations, we no longer have the people around to provide the consultation and the service and the help that a government agency ought to be giving in this area. So one of the things we're in the process of doing is trying to do as much of our research in-house and as much of our service functions -- computer programming, building maintenance and the like -- on contract, so that at least one can look at NIOSH and feel that one has a reasonable cadre of scientists around who know what they're doing.

And I think we're on the way. We started out with a pretty good group. A lot has been said; obviously, this whole conference is directed at trying to get the story about occupational health out to the public.

In the past we have tended to produce our results fairly narrowly for the professional world and in terms of recommendations for OSHA. I think it's had some problems. And one of them is that we haven't taken advantage of the situations when people really want to know and need to know what's going on. And that includes the fact that we haven't done nearly enough to follow up on our studies.

When we do a study, I think we need to assume that everyone we've come in contact with has an interest in knowing what the results are. Yet even that group has not always gotten the results. But beyond that, whenever we do a study, I think it's our obligation to figure out who all the other people who have similar problems are and get that story out.

And NIOSH is a wealth of research and information about what's going on in occupational health, and I've got to say to this audience that over the next year I hope we will do something better to get all this information out in a usable form.

I've got to tell you that the other whole area of involvement -- and maybe we'll get back to it in questions -- is the whole problem of control technology. When you're working in this area, not everything can be accomplished by standards. And to give you one example. We're faced with a problem of non-ionizing radiation, microwaves, other kinds of equipment. One that we've looked at recently is something called radio frequency heat sealers, a kind of standard industrial press that gives

you nice heating across the plates of the press, because the plates of the press are really the antenna of a radio transmitter.

And the women who work at these machines -- most of the people who work at them are women -- report that they're uncomfortable because their clothes get warm, and they can't wear jewelry because the metal in their rings burns their hands. And then when you talk to them, they take take a fluorescent light bulb and hold it up in front of the operating machine and show you that it lights spontaneously without any wires going into it when the machine is on.

On the other hand, from the scientific point of view we don't have an answer as to what all the health effects of this kind of radiation are going to be. Take it back the other way. We do know that there is a relatively cheap shielding available for this machine that almost totally eliminates the human exposure. We need to be able to make recommendations not just say what a safe level is.

But NIOSH has to be in the position of saying certain kinds of changes, certain kinds of control technology ought to come into place now, rather than waiting the 20 years or the 30 years to know what the health effects are going to be.

Thank you.

(Applause)

MR. COTTINE: Thank you, Dr. Robbins. It's now my pleasure to introduce my colleague and also the chairman of the Occupational Safety and Health Review Commission, Mr. Timothy Cleary.

MR. CLEARY: Thank you, Burt, Dr. Bingham, Dr. Robbins, participants and attendees at this great conference. It's not often that I have the opportunity to address an audience of people with such varying journalistic backgrounds with but one purpose, the understanding and accurate reporting on job safety and health matters in this country.

You heard many distinguished experts in the field yesterday and today. And I hope now to add to the vast information you've been assimilating by telling you about the Occupational Safety and Health Review Commission and it's role in safeguarding American workplaces.

First let me tell you about our purpose and structure. Then I'll get into how we go about accomplishing our aims through internal procedures and rulings.

As you probably know, the review commission has but one goal, the fair and speedy adjudication of job safety and health cases. We function like a court. When OSHA people inspect the workplace and find what they believe to be a hazard, they issue a citation, proposed penalty and a correction deadline. If the employer disagrees with any or all of what OSHA has charged him with or the penalty or the abatement date, the employer has a right to contest within 15 working days whatever he believes should be disputed.

Employees also have the right to contest for shorter correction times than those set by OSHA and additionally have the right to assert party status in any employer notice of contest, contest of either the employer or employees commences the commission's actions.

The Commission is an independent agency in the executive branch of the

government. The act that created the Commision, OSHA and NIOSH is the Occupational Safety and Health Act of 1970. The three agencies have completely separate functions: We are the judges, OSHA the complainant, and NIOSH is the research arm. And it was interesting to hear Dr. Robbins a short while ago explain his regulatory or that agency's regulatory functions.

We have nine regional offices where our 47 judges are housed. They hold their hearings in locations chosen for the convenience of the parties involved in our cases. In most instances our hearings are held right in the town where the alleged violation occurred. In no instance is a hearing held beyond 50 miles from the scene of the alleged violation.

We want participation at our hearings by all affected by the alleged hazards, so we make it as easy as possible for employers and employees to be there. We encourage this involvement in our hearings, as we believe they then are more apt to show the full picture of what happened and how it happened. With a full record we are then able to further insure just and complete decisions.

We look at each case individually, deciding it on its own merits. Our judges are a team I am justly proud of. They are all highly qualified individuals in the law and very experienced in occupational safety and health cases.

I should now explain that the Commission is a two-level system of adjudication. First, a hearing is held by an administrative law judge, and he issues a decision. The discretionary review of this decision may be ordered by any one of the three presidentially appointed commission

members in Washington, D.C. Review must be called within 30 days of the judge filing his decision. We call review on a case especially if one of the parties has requested it, but not always. Usually review is ordered if there is a question of an error by a judge or a matter of law which must be clarified. Review is actually called in only a minority of our cases.

Abatement of job hazards is essential and is central to this act. When an employer is unable to abate a hazardous condition within the allotted time because of factors beyond his control, the employer may petition for additional time. Because of the importance of the need for abatement, such petitions are identified for expeditious handling when received at the commission.

I would also note that some 83 percent of our cases are settled out of court or are withdrawn. Under such circumstances abatement of all hazards must be guaranteed before the judge or commission will grant the motion for withdrawal, or the settlement of the parties.

We've recently revised our rules to allow for quicker, less paper-clogged proceedings in cases that do not involve toxic substances, other health issues, general duty cases or other cases of an extremely serious nature. These exceptions usually require much in-depth presentation of evidence and therefore we would be remiss if we did not allow the fullest possible range of judicial proceedings in making such rulings. However, in most other cases our new simplified proceedings will apply when no party objects, and thereby wants more formal proceedings.

We hope to hasten proceedings before us and reduce their costs. Pleadings generally will not be permitted or required under the simplified

procedure rules. The federal rules of evidence will not apply and a couple of time-consuming legal steps will be prohibited.

Since becoming chairman of the review commission in 1977 it has been my aim to remove by collegial action obstacles from the process of litigation before the commission. I see these new proceedings as being especially helpful to small business persons and local unions appearing without counsel; however, with health cases the complexion of the commission necessarily changes. They always carry novel and complex issues, and they very seldom settle.

The difficulty of these cases in terms of procedural and evidentiary complexity, including extensive discovery and opinion evidence, is equal to any found in the Federal District Courts or in any state court for that matter. We're constantly educating ourselves in these emerging areas relating to occupational disease. As a matter of fact, I've just come from a week-long industrial hygiene training session attended by my fellow members and the administrative law judges. It was conducted by the Colorado State University's Occupational Safety and Health Section. It was an excellent program, and included many hours of actual laboratory exercises. I've been so gratified with the results of this program, that I intend to hold a similar program for all the commission attorneys in the near future.

Programs such as the Colorado State one are essential as our case load reflects a large increase in health-related contests. Of the 165 new cases we receive weekly, about one-third are occupational disease related. This is, I suppose, attributable to the increase in OSHA health inspections.

In fiscal year '80, OSHA expects to conduct some 46,800 safety inspections and 13,200 health inspections. Our rate of contest to inspections is also increasing at a rapid rate. In fiscal year '78 our contest rate was 9.68 and in fiscal '79 the rate is 12.27 percent and rising.

The Commission attempts, in the conduct of its business, to take as much of its business, so to speak, to areas outside Washington, D.C., whenever practicable. We held an open meeting when considering our new rules proposal package here in Chicago earlier this year. We've also recently held oral arguments in Pittsburgh, Pennsylvania, and Albuquerque, New Mexico. We recently began a program of one-day seminars in which the three members, the chief administrative law judge and the general counsel participated to help the public know more about the Commission and its rulings. Our first two were in Philadelphia in March and Dallas in June. And next week our seminar will be here in Chicago.

The responses to all of them, just as the response to this occasion, have been overwhelmingly supportive. We plan to continue holding them quarterly.

We have attempted to have clearer and more instructive rulings as well. Recently we have issued decisions which more clearly define the general duty clause of the Act. We have issued a number of decisions which give comprehensive explanation as to what constitutes a repeated violation. We have articulated policies of employees' participation in our proceedings, thereby encouraging their greater participation. We have provided more guidance on what will be allowed in trade secrets protection in pre-hearing discovery. We have reiterated the elements necessary to a

proper settlement if it is to be in the public interest. And we have continued to pass upon important issues in noise abatement, testing and measurement of toxic substances and multi-employment hazard abatement problems.

I'd like to take a few moments, if I may, to note some of the more important recent decisions that may interest you. They are examples of how we operate and the kinds of rulings we issue. The first is one insuring that a small businessman receives his day in court. This case involved the Gil Haugan Construction Company which contended that its notice of contest was to all allegations of violation and not just to the penalty, even though initially that was unclear. We ruled, however, that the intent of Gil Haugan was to dispute both the citation and penalty. We noted that there was a lack of legal representation for Haugan and there was an ambiguous use of numbers identifying the citation and penalty in the notice of contest. Our decision was appealed to the 8th Circuit Court of Appeals which upheld our ruling, stating that it was a proper exercise of the Commission's statutory discretion to employ a previously announced policy of looking to subsequent filings as an aid in discerning an employer's intent in order to interpret properly the notice of contest before it. This case largely eliminates a possible procedural boobytrap that might have prevented a small business person from having his day in court.

Just as the review commission has stepped in to protect the rights of employers, we also have done much in defining the rights of employees or their authorized representative to participate meaningfully in our proceedings. The decision that demonstrates this concern is the ITT Thompson,

Industries, Inc., case. The Commission ruled that when an authorized employee representative has elected to become a party, it is the duty of the Commission judge, the Secretary of Labor and the employer to insure an opportunity for meaningful employee participation in any settlement.

Another related case was IMC where the Commission stated that employees or their representatives, as a party, must be given an opportunity to object when, as in this case, the Secretry was moving to withdraw his charges.

Wheeling-Pittsburgh Steel Corporation was a recent case which concerned the manner in which workers' exposure to occupational noise can be tested, and pinpointing where such exposure allegedly occurred. In affirming the alleged violation we ruled that the allegation that employees are exposed to excessive noise levels need not be supported by evidence of continuous monitoring or evidence establishing employee exposure through the course of the work day. This ruling came in response to Wheeling's contention that OSHA's integrated testing of noise levels for various periods of time, instead of over an entire day, failed to depict workers' actual exposure to that hazard.

We clearly stated, "The Secretary may use sample monitoring data to support a citation for excessive noise provided that the sample data is supported by other evidence from which it may reasonably be inferred that employees were exposed to excessive sound levels."

We ruled that a citation alleging noncompliance with the noise standard does not have to specify the excessive noise levels in order to satisfy the particularity requirement of the Act. "The citation need

only provide for notice of the general locations of excessive noise levels," the decision stated, adding that "the citation in this case was sufficiently particular in that it expressly referred to the areas of excessive noise."

As I mentioned earlier, we are seeing more and more health-related cases involvong such issues as noise, Kepone, asbestos and vinyl chloride to mention a few. Before I conclude, I want to share with you the rulings in two appeals court decisions. First is the case of Western Electric, Inc. from the 2nd Circuit. Western Electric workers were exposed to vinyl chloride in the air and although they knew this exposure was under the five parts per million limit, they did not test the air. The Commission decision, which differed from my minority view, stated that initial monitoring was unnecessary when there was a reliable prediction that the amount released in the air was less than the prohibited limit. The court rejected this, stating that whenever any amount of vinyl chloride is released in the air, initial monitoring must be made.

The second case is that of the GAF Corporation. In this instance the D.C. Circuit Court upheld the Commission's finding that when an employee is exposed to any concentration of asbestos in the air, whether it be at the prohibited level or not, that the employer is obligated to provide medical examinations.

In conclusion, I'd like to say that I believe that we have done much in the greening or maturing of the Commission since the Act's passage. Our continuing aim is to do our part to foster the statutory purpose of pro-

viding safe and healthful workplaces for all Americans and insuring the fairness of contests arising under the Act.

I acknowledge your own important and special contributions to the goal, which is an important part of our national labor policy. And I would also commend OSHA for this conference, Dr. Bingham for the foresight. Because it is, after all, programs such as this that is really what OSHA is all about. It's not the so-called nitpicking enforcement actions. All of you have heard, and I'm sick of hearing about the split toilet seats and the ice in the watercoolers and the Jiffy Johns in the work fields. I'd like to hear more about the subject of this conference. I'd like to hear more about the 20-odd workers that were killed in one of the first cases that came to the Commission, the Lockheed Construction Company case, I believe it was docket number two.

I'd like to hear more about the Greenfield & Associates case, the tunnel explosion at Lake Huron when 22 workers were killed in an explosion. I'd like to hear more about the conflagration on Staten Island when 39 workers were killed, the Texas Eastern case. And I could go on and on.

OSHA is life and death in the workplace. I'm a little tired of reading, almost daily in the newspapers, about workers killed in trench cave-ins. Who would believe that an Act that someone said earlier, almost 10 years in existence, certainly eight and a half, that we'd still be reading about these things.

The Commission itself has taken a very strong position on defenses -- and I perhaps should have mentioned this in the course of my comments about cases, on safety programs, when an employer defends on the basis

of unpreventable employee misconduct. The Commission is going to take a hard and long look at safety programs. They're going to have to be more than just paper programs. They're going to have to be meaningful programs, and they're going to have to be programs that are fully implemented.

And I will close by commending to your attention a circuit court decision, National Industrial Constructors, and two Commission decisions that issued on the same day, approximately a year and a half ago, Floyd Pipe and Mountain States. I commend them to everyone's decision. Thank you very much.

(Applause)

MR. COTTINE: Thank you, Mr. Cleary. At this time we will entertain questions. Please step forward to the microphone.

MR. (UNIDENTIFIED): Well, I've got a good voice. I'd like to know how Ron McCann, the regional director of OSHA (inaudible) set them up for discharge. And we have evidence that the OSHA official comes in on the arbitration process and damages the worker. And to me, it was worthless for me to go ahead and file charges against U.S. Steel South Works (inaudible) ... in an involved case of graft and corruption out there, of off-site contractors ripping off a corporation, the equipment blown up, malfunctioning equipment. And it was useless for me to go ahead and file OSHA charges against the company when I was set up by (inaudible)... and the OSHA review guy comes in on the arbitration process, gets a hold of the arbitrator and damages the worker. We have almost direct evidence on this ... (inaudible) ... is very well aware of this.

But that's kind of damaging. This guy was the secretary-treasurer of Rennie Davis-Abbie Hoffman in Chicago Seven conspiracy trial ... testified against Rennie Davis-Abbie Hoffman and it was a fight, actually, to get the public involved in contributing to the Rennie Davis-Abbie Hoffman conspiracy. This group of people that were agitators. (Inaudible) in the public so that they could go ahead and get names.

And it's the same way with OSHA in a way I think (inaudible) --

MR. COTTINE: Let me permit Dr. Bingham to respond, if she wished.

DR. BINGHAM: Well, if you would provide, for me and perhaps Mr. McCann has it available already in our office, I don't have the details of this arbitration. It sounds to me as if you're saying that there is a discrimination factor which is covered under section 11(c) of the Act.

I would be glad to deal with it. I just don't know the specific case. From what you say, it sounds very unfair. And I'd like to have names and dates and places.

MR. (UNIDENTIFIED): (Inaudible) I could provide you -- if you could listen to the recorded message, Dr. Bingham, about Barry Menas (PHONETIC) who was the general foreman out there at the rod mill. He was denying that there was ....(inaudible). And they had -- they were talking about the watered down cement, the whole series of problems out there at South Works.

You see, there's an IRS investigation going on with J. R. Powers, who's the chief, Intelligence Section, of the IRS on outside contractors coming in, ripping them off. And then they had Lee Randall, who was the secretary of the grievance committee, coming in and said, "I don't know whether or not you were aware but we've had the occupational safety and health people

in the plant."

So OSHA came in and they nailed us for $215,000. And what happened -- what I'm seeing in OSHA is that they're reducing that fine down to $68,000. And it looks like the union, the United Steelworkers Union, the safety committee there is caving in on all the pertinent (inaudible) of gross criminal negligence where you nailed them for that. They're just acquiescing and they're caving in. And it doesn't look too good.

DR. BINGHAM: Well, if you'll talk about it later and try to -- we don't want to cave in when we have the evidence.

MR. COTTINE: Next question?

MS. WINTERNITZ: I'm Helen Winternitz. I'm a reporter with the Baltimore Sun and I have a question that does not have a simple yes or no answer, but it's something I've thought about a lot over the last couple of years. And it has to do with OSHA's basic policy on its enforcement policy that I think goes back to the Act itself and the promulgation of that.

Time and again in my reporting on health and safety problems I've seen federal OSHA inspectors, or their state equivalents, go into a workplace, find a violation, document the violation, violations ranging from safety deficiencies that cause fatalities, or health deficiencies that cause severe lead poisoning or nervous system disease, anything on that order. And then they turn around and levy a fine or a penalty that is $1,000 maximum for a serious violation, $10,000 maximum for a willful or repeated violation, which are very rare.

And my question is, in the eyes of a large corporation -- I'm not talking about small companies here by any means, these fines are so low that in many cases it would seem far easier for a company to pay these fines than to take a profound look at safety and health programs that would be needed to correct the problems and stop the violations and stop fines which are not very large.

So my question essentially is what kind of effect do these fines have on big corporations and is that a problem, perhaps, in the whole enforcement program?

DR. BINGHAM: I've thought about this a lot myself. It was brought up when Willow Island occurred and I don't remember what the amount of the penalty was but, you know, a few -- $30, $40, $60,000. I guess if you're a large company and you want to break the law, it doesn't really matter what the penalty is as long as you can pay the fine and go on.

To some people in this country breaking a federal law that really is meant to protect the lives of working men and women is wrong and if you only fine them $1.00, it wouldn't make any difference, they would still voluntarily comply. I guess you're talking about the recalcitrants mainly, large companies, I suppose, who have the finances to come into compliance and don't.

Certainly, large fines are not going to do it. We are using, referring for the first time to the Justice Department, cases where there appears to be a criminal violation. There must be a fatality and there must be a standard involved there.

I will say this, that there are more repeat and willful violations now being assessed than ever had been. The facts are that Secretary Marshall and I indicated yesterday, we are interested in the whales and not the minnows. I'm not interested, really, in penalizing a small company, sometimes a $100 fine or a $250 fine for a very small company is very troublesome and can literally mean the difference between making the payroll and not. And I would much prefer that money going into the abatement. That's a philosophical discussion, of course.

I don't know, it has something to do with the morals in this country. I think it has something to do with what this conference is about, that you have to raise the consciousness and the expectations of working men and women in this country to demand a safe and healthy workplace. There is a place for fines and for citations but you have to make it socially unacceptable to kill men and women in the workplace. It is socially unacceptable to do that on the highway and in every other situation and I think what we need in this country is to take a hard look at these issues.

MR. CLEARY: I suppose your question is partly directed also at the fact that many times you'll see situations where workers are killed or amputations occur and the penalty of $1,000 seems minuscule. I think an important point to remember is that on reinspection by OSHA, an employer is subject to penalties of up to $1,000 for each additional day that they remain in violation.

As Dr. Bingham suggests, penalties mean different things to different people. One hundred dollars may be all the money in the world to a small business person. There are those who would argue that, and believe me this

is a constant question in my mind in determining what is an appropriate penalty in the assessment of penalties. And there are those who would urge very strongly that abatement is really the name of the game. If you want excessive penalties or not excessive but large penalties, one need only refer to a recent case in the state of Pennsylvania where, if I recall correctly, the penalties were something in the order of $340,000.

So there are cases where there are very substantial penalties. And as Dr. Bingham suggested, there have been a goodly number of criminal charges being considered.

MR. (UNIDENTIFIED): I have one question intended for Dr. Robbins and a couple intended jointly to the prosecutor or complainant and to the judge.

To Dr. Robbins, and this question is really intended, through him, to get to the working press in the individual locations as a sort of a tip for a story for them to look for. To what extent is the personal protective equipment that is actually in use in the plants in the communities--as goggles, as respirators, as safety shoes and so on--to what extent is the equipment which is actually in use, effective, and to what extent are there standards for such equipment and actual equipment for female workers who have somewhat different dimensions? That's for Dr. Robbins.

Now, for Dr. Bingham and Mr. Cleary, I have questions directed to the time element as well as to the question of repeat violations. Do you want them at the same time or shall I hold?

DR. ROBBINS: Let me go ahead, if I may, to try to deal with it. I hope you don't want numbers because I'm afraid I don't have them. I think

you can assume that none of the personal protective equipment that is tested ever performs as well in the field as it is originally tested to perform.

We are currently contesting, as an example to you on the fit issue, an American National Standards Institute policy where they stated to us that they thought that quantitative fit testing is probably a good idea but is economically impossible. And our position is that it's absolutely necessary. And in terms of the quality of the equipment out there, I'll start with our first position which is that personal protective equipment should never be used unless it is absolutely necessary. And clearly, firefighters are an example where it is necessary, but in most situations engineering approaches are better. And that the stuff just never does as well as one would hope, even if there are standards and at some time it has been tested and shown as new equipment to meet those standards. It's a very difficult problem.

MR. (UNIDENTIFIED): Thank you. Now, with respect to the other two questions. In the first place, the question of repeat citations, repeat violations of the standards, at present the situation is, as I understand it, that because of a decision or an interpretation by the review commission in a General Electric case in Schenectady and perhaps in other cases as well, the employer who has a great many plants across the country has separate establishments so that if a particular situation is in violation of standards in plant A in one city, and that employer is cited for violating that particular standard in that city and then OSHA subsequently finds that that employer is in violation of the same standard,

the same kind of equipment, the same kind of hazard in another city, that's a brand new citation.

That was the Commission's decision, that these are separate establishments. Do you intend to take a look at that?

And then to the two panelists, what can you do about the speeding up of the handling of these cases? Because under the law, abatement is not required until the appeal is finally disposed of unless it's ruled to be a frivolous appeal. Recently the Commission in it's July 29th actions remanded two cases back to the administrative law judges, for rehearing on the merits. In one case a man had been killed on the job, in another case there were a couple of violations although nobody was killed. Both cases occurred several years ago. That is to say, the death in one was something like three, four years ago. The citations in both caes were issued several years ago.

In both cases the time lapse between the remanding, which is not the final adjudication, the time lapse occurred for really nitpicking technical reasons. In the one case, the Secretary sent notices of the citations to two offices of that corporation when the citations got to the two offices four days apart, the question came up as to whether the employer was within the 15 day period that he had for sending the Secretary a notice of contest because if you count from the receipt of one date he was in the limit, if you count from the other date he wasn't.

In the other case the Secretary cited an employer and mis-cited him because it referred to him by name as doing business under such and such a corporate title and actually the corporation had changed names and there-

fore it was a mis-citation. So these things are around for several years. What are you going to do about speeding up these things so that you can finally get to abatement?

(Applause)

MR. CLEARY: Let me assure you that we at the Commission are as seriously concerned about the disposition of cases as you are. We are taking all steps available to us to improve the quicker disposition of cases.

I would say that while Commissioner Barnako and I were able to dispose of a goodly number of cases, there was a period of about a year when we were without a third member. And I'm sure, given the fact that you have been able to recite with a great deal of accuracy some recent decisions of the Commission, you're certainly aware of it.

You're also certainly aware of the fact that in an attempt to break a logjam, we resorted to issuing one-to-one decisions, and that proves very effective in some cases. However, there have been at least two circuit courts of appeals that did not approve of it.

But let me, in answering your second question first, assure you that we at the Commission are grievously concerned about productivity. I realize, too, as well as you do, that abatement dates are told, until such time as the Commission issues a final order. We are working very hard at it, let me assure you. And I believe that you will see, as the Commission issues decisions, you will see faster decisions issued.

Of course as far as the two cases of your concern, I would have personally had no problem with the answers in those cases. That's not to

say I was right -- ... (not recorded)

... recently issued the Potlatch decision. As you know, while there was a majority opinion in the General Electric case, there was a subsequent decision in the George Hyman case in which we had three divergent opinions as to what ought to constitute a repeated violation. The Commission has resolved the difficulties generated by those three separate opinions in the Hyman case in the Potlatch decision.

And really, in my closing remarks, I talked about how the Commission is looking at safety programs. And what the Commission is saying in Potlatch is that we are telling employers that they cannot defend, as had been suggested by one of my colleagues in the Hyman case, they cannot defend on the basis that it was at a different location in the country. They cannot defend on the basis that you had different supervisors. What the Commission is insisting upon is a strong, well organized, informed hierarchy in every company. So that a violation cited as repeated will not come as a shock or surprise to an employer.

There are problems, there are some unanswered questions in the Potlatch decision. The questions, of course, being time lags between the initial violation and the repeated violation. But these things, of course, will have to be dealt with on a case by case basis.

Suffice it to say that it will no longer be a defense to an employer to say it is at a different work site. And this applies equally with construction as it does with general industry.

DR. BINGHAM: I don't know what I can say because all we could do would be go out and make another inspection, which would probably be

challenged. I think I can't hurry things up.

Now, I could perhaps assure that we don't make a mistake in issuing a citation so that it's thrown out on a technical difficulty. But I think Tim has answered the question.

MR COTTINE: We'll entertain one more question for the session.

MR. (UNIDENTIFIED): Judging from the figures that were stated earlier, approximately 46,000 OSHA inspections are made each year. There are approximately 1,000 OSHA inspectors. Judging from those figures, approximately 46 inspections are made each year by each OSHA inspector or less than one inspection per week.

My question is, why is it that so few inspections are made by OSHA with the staff that you have?

DR. BINGHAM: Well, it takes something like an average of 18 hours for a safety inspection. And it may take two weeks for a single inspection in a steel mill. It may take six weeks for an inspection in a large chemical plant. So the averages of say 16 and 40 hours are deceiving because -- per inspection, sometimes we have industrial hygienists tied up in a large steel mill for quite a few weeks. It's very simple, we are not wasting our time.

It's very complicated. Those compliance officers must come back, send the samples out and write up the cases. But it takes a very long time to inspect some factories. They're enormous.

MR. (UNIDENTIFIED): Is it possible that we can see an increased rate in the number of inspections in the future?

DR. BINGHAM: I'm not sure that we can ever see an increased rate because the litigation frequency is going up. The attorneys are becoming better informed that try the cases for the companies. They know where to look for the weaknesses. We must have everything down to the letter of the law in terms of all the analyses.

I think they will -- I would predict that they will take longer, not shorter, periods of time in the future. As we go into more and more complex factories with chemical operations -- I don't see any increase in rate. I think that increase will have to come because of more individuals being added.

MR. COTTINE: Let me conclude this session with the following observation dealing with the role of government in occupational disease. It seems to me that one enduring principle weaves the essential fabric of our constitution and the government it established. That principle is that neither crisis nor hardship are sufficient grounds for the forfeiture of our fundamental human rights, fairness and justice. Nor are they sufficient excuses for the neglect of our constitutional responsibility to preserve and protect the public health. Our panelists today have demonstrated their commitment to that responsibility and I thank them for their participation.

# WEALTH AND HEALTH

## ECONOMIC AND POLICY ISSUES OF REGULATION

Grover Wrenn, Director
Federal Compliance and State Programs
Occupational Safety and Health
Administration

Peter Lowry, Attorney
Caplin and Drysdale

Dr. Howard L. Kusnetz, Manager
Safety and Industrial Hygiene
Shell Oil Company

Dr. Nicholas Ashford
Associate Professor of Technology and
Policy and Assistant Director of The Center
for Policy Alternatives
Massachusetts Institute of Technology

(Applause)

MR. GREER: We have coffee in the back of the room and what we're going to try to do is get started immediately so we have the maximum amount of time for the last panel, a panel which I'm sure will be somewhat controversial.

Before we do -- and while you're getting a cup of coffee -- let me say a word for the workers. I've heard a lot, today and yesterday about workers, and we fail to realize sometimes how much work goes into one of these conferences. And there's been a fantastic group of people that have done the work to make this possible. But perhaps the first person I should give a little recognition to is a woman named Rachel Scott whom you heard from yesterday. About a year ago she came to my office with a paragraph on a piece of paper that said this conference would be a good idea. So Rachel, thank you, wherever you're sitting, for a good idea for a conference.

(Applause)

In addition to Rachel's idea, it took a lot of work to put it into effect. And the primary person working on that and the person that's made this run so smoothly these last two days is a woman named Carol Parker, and I think we ought to give her a hand as well. Thank you, Carol.

(Applause)

In addition to Carol, Rene Vawter, who's head of the Division of Communications Production at OSHA -- and Jim Foster, whom you met this morning, who's head of News Media Services. Susan Fleming, who's been manning the phones upstairs and staying with the pressroom -- Dave Bourdon,

who did a lot of writing and a lot of the work in developing the materials for this conference and the newspaper. He was really the editor of the newspaper you have. Ruellen King, who's done a fantastic job on the tables outside -- Rick Boardman who's been in charge of all the videotape work -- Althea Ward, who works also in the audiovisual work; Ken Wiliams and Phil Beck. And we also want to thank Ron McCann who is our regional administrator here. You heard his name mentioned just a moment ago. Ron and many of his staff members -- I can't remember all of their names -- worked on making this possible.

There are two other announcements we need to make. One is that we've run out of many copies of the speeches of participants today there's been such a demand. If you will leave your name and address in the pressroom along with a note about which speech you would like, prior to publishing the proceedings we will try to get you a Xerox copy of any speeches you may have missed in the handouts.

Also, for the OSHA mailing list, there's the OSHA pressroom, for the AIHC press list there's the AIHC pressroom. And there are several messages for participants that are on the bulletin board in the OSHA pressroom, on the 11th floor. So you might want to check that bulletin board before you leave. There are a number of phone messages there that haven't been picked up.

If we could, I'd like to ask people to take a seat now if you've had time to get a cup of coffee. I think the coffee will stay there for a while. Jim, I'm going to ask if you could ask those folks over there to take a seat, join us, maybe move out in the hall. I'm going to ask

Tim Cleary, other folks, if they can maybe move that out or maybe join this next panel and pay attention.

We've heard a lot about the scientific aspects of the problem of occupational disease but in the current arena the real battle is not just in the scientific area but it's really in the policy area and the economic area. And that's what this panel is all about.

The first speaker today is Grover Wrenn. Now, Grover's head of Federal Compliance for OSHA now but in this previous incarnation he was head of Health Standards. Grover Wrenn was at Health Standards during that period of time when OSHA developed probably more standards to protect workers' health than at any other period in its short history.

Not only was he involved in writing those standards, but also in fighting to defend them, justify them, present them to the public. So he's dealt in the realm beyond science in the effort to set these standards. So let me introduce Grover Wrenn.

(Applause)

MR. WRENN: The realm beyond science?

The title for this panel this afternoon begins, "Health and Wealth." And as I read that, there was an implication to me that there was a mutual exclusion of these two factors and that we couldn't have both or that conversely, we had to choose between them. I think the extent of workplace injury and illness that has been described as being present in this country, whichever end of the range you adopt as the most accurate representation of the amount of injury and illness in the workplace, represents an extreme cost to society, both in terms of dollars and in terms

of human value. And that if we are sacrificing our health in the workplace, we're surely sacrificing an important part of what we traditionally regard as the wealth of our society. And that is its health.

I'd like to take the few minutes that I have at the outset this afternoon in this panel, before we get to some other discussion and questions, to give you the views of a regulator about the kind of conflicts that these issues we've been talking about for two days present and the dilemma that the regulator faces in trying to decide these issues in the context of administering a law such as the Occupational Safety and Health Act. A law which is first and foremost a piece of remedial social legislation. It is not a law of science, it is not even a public health law in the traditional sense. It is a piece of classical labor law which embodies within it worker rights and the fundamental right to a safe and healthful workplace. And the function of the Occupational Safety and Health Administration is to be a force to bring about the reality of that right through the process of regulation.

I'm not an economist. I've had to confront a variety of economic arguments that arise and economic facts that arise in the standard-setting and decision-making process, but I've heard economists often say that justification for the form of regulation represented by an occupational safety and health act or a clean air act or a clean water act, similar pieces of reform legislation, is often the argument that traditional market forces have failed to provide the incentive for those who give rise to the environmental problem or the occupational safety and health problem, to deal with them as a part of the normal course of doing business, deal with

them effectively.

And in the occupational health field, the reason that is often the case is because of the emergence of the problem. That is, the disease is often so far removed from the time of exposure -- what we've often referred to this week as the latency period between exposure and onset of disease -- that there is no perceived economic necessity or incentive to prevent the exposure because the consequences are not going to arise for 20 years.

One of the things I want to say to you is to say that industry is right, at least, when it says that good science should be the foundation of regulation in the health field.

Good regulation requires good science. But good science is by no means an adequate basis or sufficient basis for the decisions that we've been talking about yesterday and today. The major issues of health regulation in this country today are policy issues. Societal value judgments, which are made through the process of regulation, should be made in a much larger forum and a much larger context. And the regulatory process represented by OSHA is but one part of the societal value judgment process to institute and require change in the abatement of conditions in the workplace that lead to injury and illness.

The court has described the essential elements of the judgment that the Secretary of Labor is called upon to make in issuing standards dealing with chronic disease, cancer, lead poisoning, respiratory disease. The courts have described that essential element of the decision making process as a part which cannot be tested ultimately as a factual matter, but a part which is legislative-like in its nature, with the Secretary having been

delegated by the Congress to make the kind of societal value judgment that would traditionally be made were the standard being set by the Congress of the United States.

There has been a strong plea made by industry representatives this week to depoliticize these issues of health regulation. The process that the Congress set up, in fact, is just that. It is, in a sense, an avoidance of the necessity of setting standards for vinyl chloride on the floor of the Congress, by substituting for that ad hoc judgment process a systematic procedure by which the scientific facts are brought before the Agency in a public proceeding, decisions are made within the context and parameters of the law that the Congress enacted, which provides some fairly detailed guidance as to the kind of regulation which Congress anticipated, and the factors to be taken into consideration. And provides for extensive opportunity for interested parties to require the judgments of the Secretary to be reviewed in the courts of this country all the way up to the Supreme Court, following the decision-making process.

It is -- the Act also that, through organization, depoliticizes the process by creating, as Tony Robbins described to you, NIOSH, the principal scientific component of the health regulatory process as a separate scientific research entity in a separate department of government from OSHA where the ultimate legislative type decisions are made.

That, I submit to you, is a substantial depoliticization, to use the term of some of the industry spokesmen this week, of the standard setting process. But I also submit to you that until there is a greater sense of awareness and a heightened sense of concern on the part of workers and the

community as a whole in this country for the consequences and extent of occupational disease and occupational illness, until that emerges and rises to the level of a substantial public policy concern in this country as a whole, there is likely not to be significant pressure for change in those conditions outside of the very occasional issuance of a small number of regulations dealing with only a tiny fraction of the hazards in the workplace that can come from occupational safety and health administration.

You have heard talk this week of excess regulation, runaway regulation, rampant regulation, as though we had nearly exhausted the list of toxic substances to regulate and were looking around for the next wave. I don't say to you proudly that the Occupational Safety and Health Administration has only issued standards dealing with 20 toxic substances, most of them demonstrated human cancer-causing substances, in eight years of its existence.

Now, these have been significant standards. They've dealt with major problems. But I submit to you that's hardly a runaway standard setting machine. In fact, I think we all realize, as a practical matter, to deal with a larger part of the problem requires a degree of public knowledge and public concern and an active participation on the part of workers.

Now, I want to preserve a couple of minutes for another round so I want to stop with just an illustration of how economics arise in the standard-setting process as a confounding issue, but important issue in the eyes of the decision makers.

In setting the standard for worker exposure to coke oven emissions, OSHA was dealing with a proven cancer risk to workers, acknowledged by

the steel industry itself. OSHA set a standard which represented the extent of the ability of the industry to feasibly reduce worker exposure to coke oven emissions, through the rehabilitation of existing coke oven batteries and the proper design and construction and operation of coke oven batteries in the future.

The steel industry vigorously opposed the standard in the courts and the argument is an interesting one, an instructive one, and is one of the early advocacies of the use of cost-benefit analysis as the determinant of the policy decision.

The steel industry said coke oven emissions cause cancer -- oh, they argued there was a threshold but I think there was strong consensus on the part of the industry's testimony, even their scientists, that coke oven emissions caused cancer. They said the OSHA standard was too strict but they also said, "We can afford it," even in the time when the public perceived the steel industry to be a beleagured economic enterprise, they said, "We can afford it." We can raise the capital and the standard comes at a timely moment because our coke production facilities in this country are worn out and we're going to have to substantially recapitalize our industry over the next 10 to 15 years, as well as build new production capacity to meet new demand."

But what their conclusion was: "It deals with a significant health hazard. We can afford it, but it ain't worth it." That's the fundamental argument. How much protection should we have? In this case it wasn't how much can we afford, it was not an ultimate question of the infeasibility of the requirement economically. The industry argued that it was more

protection than was economically efficient to try to achieve and that we were over-reaching.

Now, I will say to you that the most difficult questions that the Secretary of Labor has to decide in setting standards, time and time again, are not the scientific questions. The science may be murky but the decisions on the basis of this science are much more easily arrived at than the economic policy decisions are decided. For a number of reasons: costs and benefits are presented in different terms. The Department of Labor has no way to balance off the relative worth of $250 million in compliance costs versus 250 lives that will be saved if the standard is complied with even if the data is adequate to predict with any certainty the reduction in health risks that would occur.

Another difficulty is also that almost the sole source for information on cost of compliance rests in the hands of those who are going to be regulated by the standard. The rule-making process is an informal one, without subpoena power, without cross examination of testimony. And the industries that are going to be subject to a set andard which is proposed for issuance are not required to open their books and make publicly available the cost data -- the data on which they base their estimated cost of compliance that they lay before the Agency.

The credibility of those cost estimates has been eroded by experiences like vinly chloride where the claim of two million job lost and the closure of 30 percent of the plastic production facilities in this country was followed 12 to 18 months later by full page ads in the Wall Street Journal and trade press proclaiming success in the industry's voluntary compliance

with the new vinyl chloride standard.

Now, I'm pleased with the measure of success that was achieved by the industry but it does give rise to a difficult problem in terms of the credibility of unsubstantiated claims about cost of compliance that arise in a rule-making, where that evidence can't be fully tested.

Cost of compliance is an important consideration and it really bears on two aspects of standard setting, and only two. One is -- the first is a question of feasibility. That is, what can reasonably be expected to be achieved by the industry that is being asked to reduce the risk of exposure to a toxic substance in the workplace? That obviously requires cost data, it requires an understanding of the nature of the industry, its composition, the technology available today, that is in use, the degree of exposure, the distance that we're asking exposure to be reduced. These are complex factors.

The second element is one of time. And that is that sometimes a large cost of compliance can be accommodated effectively by providing the goal that ought to be set in terms of achieving the health need that the hazard gives rise to, but over a sufficiently long period of time to permit orderly planning and change in the production of facilities and the technology that is used in which the regulated substances to be used and which gives rise to the hazard.

I think I'll reserve the remainder of my time for the question period at the end, then. But these are interesting issues. I would once again say that the most important goal of this seminar is, I think, the

opportunity it presents to heighten the level of awareness and knowledge and concern, first and foremost in the media and through them the audience of workers and the public who must have knowledge of these issues and substantial knowledge of the public policy issues. That's where the argument is, that's what the issue is. The science comes a whole lot easier than that fundamental question of societal value judgment, which is what the regulatory process is really focused on. Thank you.

(Applause.)

MR. GREER: Our next speaker is Mr. Peter Lowry, who is now with a law firm in Washington. It's the firm of Caplan and Drysdale. But prior to that, and up until 1978, he was the chief counsel for the Council on Wage and Price Stability, an institution well known to every regulatory agency in Washington, with mixed feelings all acros the board in government. But an agency that has played a tremendously and increasingly important role in the regulatory process. Peter.

MR. LOWRY: Thank you very much. When I was jotting down the remarks that I was going to make here today, I started thinking about some way to introduce them and some funny story I could tell you all. And I realized that occupational health is a serious enough business that I didn't really know any stories about it that I could tell.

But I did have one experience that I thought I'd share with you. I was on my way here, it was late and I was trying to catch a plane in Washington, D.C. I got on a bus without really looking at which bus it was, thinking it was the bus to the airport. It turned out to be a bus from St. Elizabeth's, which is a mental hospital in Washington, D.C. It was the

the bus that picks up the half way patients who are out during the day.

I sat down and the bus driver -- or whoever he was -- came back and was taking a headcount, "One, two, three, four, five," and he came to me and he stopped. He said, "Are you on the right bus?" And I said, "I think so. My name's Peter Lowry and I'm going to Chicago and I'm going to stand up in front of a group of labor media and people like Barry Commoner and Sam Epstein and explain why cost-benefit analysis is such a great idea." The driver just looked at me and went on counting. "Six, seven, eight."

(Laughter)

So that's what I'm going to do. I'm going to be talking about cost-benefit analysis and its usefulness in standard-setting. I am going to talk about why the Council on Wage and Price Stability and others suggest that we do it, what it is, what it isn't. There's been a lot of talk about cost-benefit analysis today and I think there's some misconceptions. I am going to talk about what the alternatives are if you don't do some sort of cost-benefit analysis in standard-setting, and, finally, what its defects and limitations are because it does have several. It's not an ultimate answer of any sort.

I intend my remarks to be illustrative of the issues rather than to advocate one side or the other. At the same time I think perhaps my own biases will be clear.

I suppose the first question is why do any cost-benefit analysis? And the answer of those who advocate it is that at some point in standard setting there is some balancing required, some social balancing of the sort that Grover talked about.

How tightly do you regulate automobile exhaust emissions? If you can make a car that has absolutely zero exhaust emission but is so expensive that few people can afford it whereas a much less expensive car which produces only a minimum amount of exhaust emission can be produced and can generally be afforded by most people, which car do you want to produce? I deliberately picked a non-OSHA example. But that kind of balancing is a problem in any sort of standard-setting. And it's a problem, really, of balancing not just the cost to the industry and the benefits to individual workers, it's also a problem of balancing the cost to society as a whole and the benefits to society as a whole.

There's a problem, of course, as to who does the balancing. I'm not going to spend any time on it but there's an issue that has raged and continues to, within the government and outside of it, as to the extend to which standard-setting agencies are supposed to be advocates for a particular group and the extent to which they are supposed to be neutral in setting a standard.

But whether the head of OSHA, the Secretary of Labor, the President or the Congress, ultimately makes the balancing decision, at some point, there is a balancing of the social advantages and social disadvantages to some particular regulation.

Those people who argue that there is a need for this balancing primarily base their arguments -- and this is my point of view personally, as well -- on the premise that our resources are limited and that we cannot do everything. We simply do not have the GNP in this country to have a zero risk workplace and a zero pollution environment and all the energy

we want and all the decent housing and all the food and a rising standard of living, and so forth.

Just arguing that premise over the past couple of years, has been something of a problem. Because that was not really the perception, the social perception, under which OSHA and a number of other similar regulatory agencies were conceived. Several of the health and safety type statutes were written in the sixties when many people believed that we could do everything, that we were so rich and our economy was so strong that we could declare war on poverty and ignorance an ill-health at the same time and handle all of those problems at once.

That perception is changing. Inflation, obviously, is an enormous concern today. It's a concern of the population at large. And that concern spills over, inevitably, into health and safety regulation and standard-setting because health and safety regulation costs money.

It may be worth it, in either some or in all cases; and that's the issue, that the regulator is faced with; but it does cost money. The role of the Council on Wage and Price Stability in most of these questions, or at least I think how we saw ourselves at that time, was as an advisory body. And our attempt was to -- I hear the furious scratching of a pencil over there from some of my colleagues on the panel, and I expect during rebuttal to have the opposite point of view presented -- but our goal, in part, was to have stated as explicitly as possible the costs and benefits of a particular standard. The term cost-benefit is economic jargon, but it means the advantages, the reasons for doing something and the costs of doing it. And our objective was to have them, as I say, stated as

explicitly as posible for the decision maker to look at and reach a decision.

Costs are relatively easy to analyze when you look at health regulations. You can put them in dollar terms. Now there are problems getting accurate data from people who have a bias. Suprisingly, that cuts several ways. We found that in looking at industry data, for instance, sometimes the industry people were correct and fair with their data, sometimes they made greatly inflated claims about what a regulation would cost. And, sometimes the incentive of some of the companies, the larger companies in the industry, ran the other way. Because they could stand the costs of regulation better than their smaller competitors, they had an incentive to understate the cost.

But while there are problems with quantifying the costs of a regulation, it can be done. The problems of benefits are more substantial. Grover's right, it doesn't make, really, any sense to try to state benefits in dollar terms, you state them in terms of, for example, of health benefits. You state that you are reducing the risk of cancer by so much, or that you are reducing the risk of 20 percent hearing loss over x years by so much. That still requires a judgment of the policy maker as to what the cost benefit trade-offs are.

As far as what cost-benefit analysis isn't, it isn't just looking at the costs to industry. Those can be greater or lesser than the cost to

society as a whole. It's looking at the overall cost to the consumer or society as a whole. It is not placing a dollar value on everything, it is not placing a dollar value on human life. And finally, it is not a pure and exact science. Of course, nothing is. The toxicology -- nothing that's involved in health standard-setting for example is not absolutely exact. But cost-benefit analysis does ultimately involve somebody making tough, political judgments. It just makes the trade-offs very explicit.

Well, there are people who say to you don't do cost-benefit analysis, it's terrible. And my answer to that is always to ask, what are the alternatives? You do it implicitly, anyway. What if you don't use any cost-benefit analysis, what if you don't look at either the benefits of a regulation or its costs? I'm not prepared to adopt the viewpoint of some people that the marketplace will take care of it all, I don't like that alternative. As a second alternative what about "feasibility," that's a word that appears in the OSHA statute? Well, what's feasible? Anything is feasible, given enough money. You can take a hazardous industrial process and put it in a satellite in orbit but the problem is that we don't have enough money to do that for everything. So you're right back to making trade-offs.

What if feasibility means a regulation is feasible if you are not bankrupting a company being regulated? Well, do you really want to look at costs that way? Do you really want to look at the company or do you want to look at society as a whole, at the consumer? If you decide that, using feasibility as your guide, you set the standard so tightly that the company can just comply with it, can just afford it without going bankrupt. What

do you do when you've got several companies in an industry -- lead provides a good example -- there may be some small, inefficient battery makers with antiquated equipment which are posing terrible health hazards to their workers. But do you set the standards so you continue to allow them to operate? Or do you make the standard so tight that the major battery manufacturers just barely make a profit and you give variances to these small people, thus subsidizing inefficient use of capital?

These are the sorts of things that you run into when you try to use feasibility as a standard. You've got to give the word some sort of content and I frankly think you end up going around in circles when you do.

Finally, I'm not prepared either, to take the alternative suggested by Sam Epstein's point of view, pushed to the extreme and say, "well, we've got a collection of horror stories of what some companies have done and they're the only ones who have data and their data is bad and so we won't pay any attention to it." Then what do you do? Send somebody in a back room to flip coins or make decisions on the basis of no data? Just use intuition as to where the standard ought to be set in parts per million? I don't find that a very satisfactory answer, either. I think cost-benefit analysis is the last approach.

There are limits to cost-benefit analysis. Besides the fact that it's not an exact science, it's like any tool. There are places where it should not be used. I was taking notes this morning when I was listening as people talked about cost-benefit analysis. And it reminded me of a law school class where we were taught to argue in the alternative. An argument in the alternative is where you accuse me of denting your car while I was

driving it and I say, "Well, first of all I gave it back to you in good condition. Secondly, it was already dented when I borrowed it. And finally, you never loaned it to me in the first place."

(Laughter)

And some of the criticism of cost-benefit analysis runs the same way. One, we shouldn't use cost-benefit analysis because it's a terrible idea. Two, we shouldn't use it because it's often done incorrectly and thus leads to bad results. And finally, when it is done right it shows that we're not regulating enough anyway.

But I think that it reaches its limitations where you have substantial problems getting data, particularly in situations where you simply cannot know now what the potential risks of a toxic chemical are going to be 20 years from now. I don't know what you do in that situation. I'm not sure that any of the usual approaches to standard-setting are terribly satisfactory when you run into that problem. And of course, then you run into the potential problem of a catastrophic health hazard, something that would get in the food chain and perhaps lead to genetic damage through several generations. I simply don't have an answer for what a regulator does in that situation and how he or she makes the choices at all rationally.

But those are my remarks on cost-benefit analysis. I do think it's useful, I think it has its place. And I'll save a couple of minutes for questions.

(Applause)

MR. GREER: Thank you, Peter. My other boss, Ray Marshall, who is

trained in the mysteries of economics, says of macroeconomics, Peter, that there are two kinds of economists, those who don't know and those that don't know they don't know. So you've admitted at least the limitations of what we don't know.

Let me now introduce Howard Kusnetz, he is manager of safety, industrial hygiene for the Shell Oil Company. Prior to that, prior to joining Shell Oil, he worked with U.S. Public Health Service and he was the HEW representative to the White House taskforce that laid the groundwork in developing the first idea around the occupational safety and health act. Howard?

MR. KUSNETZ: Thank you, Frank. And again, thank you for the invitation to participate here.

Let me get just a little personal before I get into the meat of what I have prepared here, because this week I celebrate an anniversary and it's the 30th anniversary of my entry into the field of industrial hygiene. I'm not going to say what my birthday is coming up, but it does work out that I will have spent and have spent the better part of my life, well more than half, working to assure that no worker has to pay with his or her life for the privilege of having a job.

As indicated, when I was in the Public Health Service I was also assigned to a three person White House taskforce at the direction of Joe Califano under then President Johnson, and developed and was coauthor of the document that resulted ultimately in the Occupational Safety and Health Act. And I had to smile when Grover and Peter were talking about the basis of the act and as to what was meant there because I was there, not only at

the birth but I think at the conception as well.

I cite this background particularly to underscore my belief, my personal belief, that the legislation, the regulation and the enforcement activities envisaged by the Act were, as far back as 1966 when we started working on it and today, are all necessary. And I cite this background also to emphasize as strongly as I possibly can my personal dedication, and repeating, the lifetime I've worked, to make sure that worker health is protected.

Now, I was asked to join this panel. I'm not an economist, although I have a cousin who is one with the same name. I was asked to join this panel three weeks ago, although this effort was started a little over a year ago, and just given the title and told it meant risk, cost and benefit. And I've had a devil of a time trying to decide what it was I could say.

But I can tell you what I'm not going to talk about in a few minutes I have allotted. I'm not going to talk about what level of risk, whether it's one death in a million or 10 million or 1,000 million is acceptable. I'm not going to talk of zero risk and I'm not going to offer any magic formulas on risk benefit or cost-benefit. And I certainly am not going to set a dollar figure on the value of human life.

What I should like to do, however, is to start by examining the elements and concepts that go into our national policies regarding health regulation an disease prevention. And I'm going to start with looking at the whole spectrum of diseases, not just the occupational.

Now, most of us if we think back a bit will remember saving coins for

the March of Dimes program to combat polio. And today we're repeatedly asked by private agencies and by dedicated volunteers for contributions to help fight many diseases, for example heart disease or muscular dystrophy or birth defects or multiple sclerosis. We're asked to buy Christmas seals and Easter seals.

And it seems to be that most of this private activity flows from the inability or the deliberate reluctance on the part of government to define a national policy on the economics of disease prevention and cure and on the efforts of control. And to ascertain the relative importance of competing diseases.

And why is this private effort important and why do I make reference to it at this meeting, particularly? Because to prevent and cure these diseases there is not only a need, but a competition, for available resources. And resources such as phsyicians and dollars and therapists and laboratories and scientists. We have diseases competing for cures and in almost all instances the approach to, and the emphasis on, the conquest of most of these diseases is to look at the incidence rate and then try to reduce that rate and to reduce the absolute number of cases.

And for occupational diseases we have competition for resources, too. But we have no national policy on the economics of occupational disease, on the control efforts, nor any ranking of relative importance. We look for prevention in theory, almost to the exclusion of occupational disease reduction. And almost invariably, the practice is to start from animal studies or studies on bacteria and yeast cells and then by use of involved formulas and with many assumptions, to try to calculate whether there is

going to be one case in a million or 10 million or whatever.

And then these gee-whiz calculations are used to set national policy. In fact, OSHA would have its regulatory policy flow almost automatically from these calculations. And there has been virtually no effort in setting policy from the other way around. That is, in determining the current incidence of diseases of occupational origin and then determining the nature and level of effort to reduce that incidence to some lower rate.

I am not -- and I emphasize "not" -- advocating that we wait until we have bodies to count. Nor am I saying that we should rely solely on the counting of occupational disease cases. But by relying almost exclusively on the results of tests on animals to derive on a theoretical basis all sorts of risk estimates, estimates which incidentally cannot be verified by an experimental process, that one ignores a practical, effective approach and does not look at occupational disease reduction from a realistic standpoint.

What I am saying is that both approaches, calculation upward from the animal data and reduction downward from existing cases, because cases do exist, both approaches should be used. Not exclusively one or the other but both. And as Grover has pointed out, just a few minutes ago, OSHA and the regulators have tended to mix science and policy and there is a need to separate these.

But because of this mixture of science and policy, OSHA tends to have opted for the theoretical approach. There is a policy on cancer which says there is no choice in the regulation. If a substance meets boilerplate criteria for classification as a Class I carcinogen, there is an automatic

triggering of regulatory-mandated control effort with resultant commitment of resources for that one substance. And there is no provision for considering latency, potency, disease site, potential for disability or possiblity for cure. There is no consideration of what resources may be needed for the next substance. And automatic classification and automatic control effort requirements do not permit considered resource allocation or rational setting of regulatory policy. And what happens? Regulatory policy degenerates into an automatic requirment for using all feasible resources for handling the one substance under consideration at the time and all available resources are deemed to be allocated to that one problem.

But when one sees resources in this way, one devotes a great deal of time and effort to one problem. And when that effort is mandated by a policy position regardless of the real need, all efforts are expended in the one area and all other areas tend to suffer.

Let me just give you one example of this. When OSHA set the one ppm emergency temporary standard for benzene in 1977, it also required that certain basic exposure monitoring studies had to be done. And although we disagreed with the standards and on the basis of previous and continuing work, concluded that much of the required monitoring in our facilities was unnecessary, we nevertheless had to comply with the law as we saw it, about to take effect. Shell spent 17 man-months of professional industrial hygienists' time just in the two summer months of 1977 on the sampling of benzene in all of our facilities and only to verify that in most of these places the monitoring was, indeed, unnecessary. Professional industrial hygienists were pulled off other jobs. And this, to me, was an abuse

of resources and it resulted from a mixture of science and policy.

And let's examine then, if we can, for a minute the relative role of science and separate that from the role of policy because that's the title of this panel today, the question of policy and regulation. Science can identify the probability of disease proceeding, as I said, both upward from animal to the human, and downward from the incidence of disease. The scientific process is to evaluate the quality and significance of all available data relating to potential harmful effects. It considers whether experimental protocols are proper, identifies the substances likely to be harmful. It determines relative potency or severity of effects and permits reason and consistent setting of priorities.

Science can identify the levels of reduction which may be expected with given levels of effort. But science by itself cannot and should not make the societal judgment of what the reduction should be. The policy consideration, on the other hand, relates to what the risks to health and the potential levels should be. And policy determinations for health regulation, whether we like it or not, and as Dr. Rall pointed out yesterday, are political in nature. And I'm going to illustrate this in a few minutes at the end of this presentation.

And then in determining the level of effort appropriate, it is impossible to avoid economics. And I'm not referring to the dollar cost to the manufacturer alone. Generally those costs can be factored into the costs of products. What I'd like to call to your attention is the downstream effect well beyond the manufacturer here.

I'd like to give you two quick examples and I'm going to pick products which we don't make so there's no question of self-serving interest over here. Let's look at one of these, formaldehyde. Just one of the very many consumption areas for formaldehyde is in the plywood industry where it's used in making resins for adhesive purposes. The bulk of U.S. consumption of plywood is in the softwood plywood and nearly all, about 98 percent of the adhesive resin used in plywood, is used in the softwood sector. And the applications include almost every aspect of home and industrial construction. And these adhesives are used because they bring desirable properties to plywood which today cannot be obtained using substitute adhesives. And therefore, any regulation which might lead to unwarranted restrictions on the use of formaldehyde, you have to look to the downstream effects. The dislocations in the construction industry, possible higher construction unemployment, fewer housing starts and higher housing costs.

The costs, of course, will be passed on to the consumer. In the case of other chemicals, the public may not even have the option of paying more. And again, let me give you a quick example. In the case of the chlorinated solvent, chlorinated hydrocarbon solvent, tetra or perchlorethylene, sometimes referred to as perc, the effects will be extremely severe at the local or community level. This solvent has a tremendous number of industrial uses, including that for everyday dry cleaning purposes. In fact, between 40 to 60 percent of all the dry cleaning done in the United States today is done with perc.

Now, perc when fed to mice caused tumors in some of the animals. And while this is scientifically inconclusive evidence for inhalation toxicity

because of the way it was done and the dosage levels, it was enough for perc to become a candidate as a Class I carcinogen.

And what would happen if perc could no longer be used in dry cleaning? Well, as an engineer I can tell you there's just no safe way to switch solvents in degreasing or dry cleaning equipment or machines without modifying or replacing that equipment. And that means, from a practical viewpoint, that approximately one-half of the dry cleaners in this country would have to shut down for some months until the modifications could be made or until the new equipment could be made available.

And what costs could we postulate under these circumstances? Well, there's the cost of the conversion. There's the inconvenience to the consuming public which would probably find dry cleaning lines in the stores which do not use perc. Maybe we'd even have to resort to odd and even dry cleaning days. But more important, there would be the loss of business which will have to be borne by thousands of neighborhood small businessmen while they are forced to close during the conversion period. And many just may not reopen.

Many may find their savings depleted with no income during the conversion period. In trying to analyze the risks and the benefits in both the economic and social costs down-stream of the manufacturer just may not be ignored. And this is the kind of information that must be taken into consideration by the policy makers before society can begin to balance the risk and the costs and the benefits.

Now, I've sat here for two days and I've heard a number of speakers say that we can't use risk-benefit calculations as a determinant of health policy. But you and I know that that's just not so. Because these considerations are used all the time, they've been used in the past, they're being used today. And again, let me illustrate with two very familiar examples to you.

It is hard for me to imagine that governmental authorities not having used risk-benefit considerations when they mandated the introduction of a rat poison, sodium fluoride, into public water supplies. And supposedly they balanced the risk to the elderly, to the ill, the risk of trying to assure control of just one ppm against the dental benefits for children. And yet, in spite of the science, in spite of the educational efforts, there have been segments of the public in large, major cities, which still have rejected sodium fluoride.

And again, I want to state I am not against the use of fluoride to prevent tooth decay. My children happened to have been born in Salt Lake City, and one in Cincinnati, both cities which did not have fluoridated water supplies. And I made up stock solutions of fluoride ion in the laboratory, brought them home and they got it in their formulas. What I am saying is that the public was made aware of the science, the public was educated to the benefits and the risks, and the public's wishes entered the policy decisions.

Just another example where risk-benefit analysis was appropriate was in the swine flu vaccine program. I would hope that the authorities in their concern for the public, and in thinking through all the ramifications of swine flu, must have considered the possibility and the risk of Guillain-Barre syndrome, a form of paralysis. At some time they must have decided that the benefits to be derived from the vaccine were much larger than the risks of human paralysis but they went ahead with the program.

But when the news broke of people falling victim to Guillain-Barre, the perception of risk on the part of the health authorities appeared to change from a health risk to a political fallout risk. And we know what happened and how the swine flu program ended. What we need is an openness in stating facts, in expressing opinions and separating the one from the other. Regulation is not pure science. Regulation needs to be developed in an open forum. And with the press insuring openness from both, both government and industry can work together to reconcile the sometimes conflicting values that underlie our respective interests, perspectives and goals.

It's this kind of working together that can be achieved only by a proper understanding of the scientific and the political roles. Only then can we make intelligent and socially acceptable decisions on wealth and health. Thank you very much.

(Applause)

MR. GREER: Our final speaker, and you can get ready, we'll open it up for questions immediately after this speaker, is Mr. Nick Ashford. He is associate professor of technology and policy, and assistant director of the

Center of Policy Alternatives at the Massachusetts Institute of Technology. He is the author of a study which was published under the Ford Foundation, "Crisis in the Workplace, Occupational Disease and Injury." Nick Ashford.

MR. ASHFORD: I'm not sure I seriously disagree with any of the statements that were made by my colleagues. What I'd like to do, for myself as well as, perhaps, for you, is try to weave the many things we've heard today in a kind of closing comment, if I might take that prerogative, to see if we can understand both the technical difficulties of some of the issues we're dealing with and the political realities.

What we have heard in the criticisms of regulation is either that there is too much or too little, depending on who is criticizing. Additional criticisms are that regulation is either being exercised ineffectively, inefficiently, or unfairly.

Now the question is, how much regulation is enough, how do we do it fairly, how do we do it efficiently, and are there analytical techniques that will help us get to where we want to go.

Let me further assume for the sake of argument and take the most generous -- generous -- position that only five percent of what is produced in our industrial system is toxic or harmful. Or to put it another way, only five percent of the companies that exist are irresponsible. Or to put it another way, only five percent of the substances that we produce need regulation. Now, that's as far back a position, for the sake of argument, I think anybody would ask someone to assume.

Even if that were the case, it would require a strong, regulatory posture on the part of the government. We have somehow in these dis-

cussions created a strawman, that somebody out there said all chemicals cause cancer. Or somebody out there said we were knee-deep in a problem which indicted every single aspect of industrial production.

I don't think anybody ever said that. And I don't think you have to say that to believe we have a problem. If you design a set of brakes for a car that operates beautifully 95 percent of the time and fail 5 percent of the time, that's not good enough. Nobody wants to drive a car that fails 5 percent of the time. Now, maybe sometime you go into a bush and you don't get hurt; other times you go into a tree and you lose your life. What the risk of death is on that 5 percent of failure is a different question.

But there are defects in the industrial system. There are things that slip through the cracks, science is not perfect, and we don't want zero risk but zero depends on where you draw the decimal point.

Let me suggest that there are five key policy issues that we have been going around the barn with here today. The first is whether a particular substance or how we determine, whether a particular substance poses an unacceptable risk. A second key policy question is what level of protection does OSHA or a regulatory agency provide and what burdens should OSHA be allowed to impose on producers, on consumers, and on workers themselves. The question is how do we make that difficult trade-off.

A third, and different policy question is, of the substances that we know pose an unacceptable risk, how do we set a priority list for action given finite resources? We can't regulate everything, at least we can't regulate everything now. The fourth policy question is how do we regulate?

Do we do it substance-by-substance, do we use a generic, collective approach? Who pays? Who does the testing? How much MRP do we require? What is the form of the regulation that will get us the goal that we want to achieve?

And finally, a question that's not been dealt with here, how do we balance off short-term goals with long-term goals? That is, how do we take care -- how much effort do we devote to solving the benzene problem today or a hazard that's the focus of a petition by a union to protect its workers against the long-term goal (which is really the purpose of regulation) to restructure the nature of industrial production in this country.

That key question has to receive some attention and has not at this time. For the sake of brevity I will not repeat the questions and the issues that go into the determination of what is risk and acceptable risk. It is both scientific and political. I would just caution that we must make a distinction between those two determinations.

As to the central problem in trade-off analysis, the cost-benefit question, the issue of the level of protection, here, too, we have to decide and distinguish between the short term costs and benefits that emerge from regulation and the long term consequences.

Is cost-benefit analysis asking the correct question? Do we want, in fact, the most health for the bucks? You may be shocked to find out that we may not want the most health for the bucks. And the decision that is being forced upon us by the economic paradigm is that somehow it's most desirable to get a high rate of return on the regulation investment.

There is another decision rule operating. I am not one of those people who pound my fists on the table and say, you can't value human life in monetary terms, although I don't believe you can. I have done cost-benefit analysis, I devoted four years of my life to developing a complex, multi-attribute cost-benefit methodology for analyzing these kinds of trade-offs. In fact, my research group at MIT did it for the lead problem in terms of the OSHA standard. What's interesting is that the Council on Wage and Price Stability made no fuss at all about the benefits study in the lead standard. The Council did not object to the lead standard. You didn't notice the silence but there was no silence. In fact, I understand that the Council said, "If anything, this standard should have been more stringent." But I leave you with the question, why didn't it make that statement policy? I mean, if there was such a good job done on the benefits side with lead, why wasn't OSHA given a nice hand of applause?

Well, I don't know the answer to that question. But I do know how difficult it was to do the benefit calculation in that exercise. Extremely difficult. It is time consuming, it is resource consuming, it is not an easy thing to do. And with carcinogens, in terms of determining the risk profile of the number of bodies that fall, it is pretty near impossible, if you want to do it correctly.

Now, there are limitations with cost-estimate techniques as well. We've heard that the general problems with estimating costs lie in the fact that there's both uncertainty attending those costs and unreliability. Uncertainty comes partly, by the way, because we ignore economies of scale.

in terms of learning how to comply. We ignore new technology which is indeed being stimulated by regulation. And we have one source for most of the knowledge, and that is the regulated firm itself.

I don't need to remind you, but I will, that the vinyl chloride regulation would have failed a cost-benefit test. The allegation was that 2.2 million workers would be put out of work with the entire industry collapsing. We know that there was practically no measureable effect in terms of the one part per million, stringent vinyl chloride standard.

Let me say, by the way, that inflation, while important to all of us, with regard to regulation is a phony issue. It is a phony issue all the way down the line. The Council on Wage and Price Stability itself has calculated that no more than 0.75 percent of the annual increase in the Consumer Price Index could possibly be traced to regulation. Less than one percent in time of double digit inflation. This is the case, benefits aside, not even asking what you get for the regulation. The cost impact is negligible compared to other problems in our economy. And so one should ask, why do we hear about the inflationary effects of the costs?

On the benefits side, our ability to ascertain and calculate risks, you only need to think about how good we were with reactor safety and think about Three Mile Island. You only need to think about how easy it might have been, or difficult, to detect design defects with the DC-10. Is the science and the epidemiology of safety and health well-established enough to rely on those techniques? Not yet. Maybe never with regard to some substances.

The real benefit of regulation, I submit to you, is not how many

bodies you save from falling from benzene. This is the secret; the secret is that the benefit of regulation is due to the leveraging effect -- the change in signals that we give our industrial establishment to change the way it produces products. That is the payoff. It is a long-term payoff. What we do with benzene will signal what industry does with toluene and with xylene and with decane and with other solvents. If we want to restructure the nature of industrial production the signals have to be strong.

Let me give you an example which will convince you. If you wanted to calculate the record, give a report card grade, which seems to be common today in government, to the Internal Revenue Service, you would not calculate the fines it collected for the violation of the tax laws because we know that people are inclined to fill out their forms correctly out of the fear of being audited. You never can measure what the payoff is. And the payoff with regulation is the change in the industrial system. It's a 10-year or 20-year payoff. It's not how many bodies are prevented from falling by regulating benzene.

The cost-benefit comparison has been talked about in terms of how difficult it is. Part of the problem with a cost-benefit framework is you don't ask who wins and who loses. And that, like the concept of acceptable risk, is a political decision. Yes, I believe agencies should be made to articulate what the nature of the trade-offs are. Yes, they do that kind of articulation.

I do not believe, because of the nature of the occupational health problem, that we are regulating minnows and not whales. Problems emerge

because we happen to calculate excess cancer, excess disease. To qualify for using scarce regulatory resources it has to become such a prominent problem that people can't ignore it any longer. We are not now regulating the last 10 percent of the pollution problem as the economists would have us believe.

And I'll tell you something else. We are not trying to get the most health for the bucks. And let me tell you why not. Let me take an example from another area. Let's take the delivery of power in the Northeast. The forcing of a cost effective mandate upon the power agencies would demand that you deliver the cheapest electricity to the consumer. Now, that sounds wonderful. I really want to have the cheapest electricity. I mean, why would you ever not want to have the cheapest electricity? Well, if getting the cheapest electricity means you have occasional brownouts and blackouts in Harlem or on Fifth Avenue, then you aren't going to have those blackouts, are you? No, because we spend some money to make sure that we do not have events taking place that we will regret.

In fact, the operating rule in this area is minimizing the regret of unwanted catastrophies, not maximizing the health benefit. Ladies and gentlemen, you've had the wool pulled over your eyes by being asked to accept the intuitively sensible rule that we maximize health benefits. That isn't what it's about. Besides, if you were to maximize the direct payoff -- that is you have a list of 10 substances and you say, I'm going to do epidemiology, I'm going to do my calculations and discover how many bodies I would save by regulating these 10 substances and allocate resources so I can get the most health for the bucks -- you don't

necessarily maximize the indirect payoff; remember, I said the real payoff was leveraging. It doesn't matter whether you maximize the direct payoff from those ten standards -- that is, save people from benzene, from coke ovens, from lead. What's important is whether lead and benzene and the coke ovens give enough signals to industry across this country to reorder its industrial process. And I'm saying that in the kindest fashion. What is sad, very sad, about the industrial response in this country is that we are losing an opportunity, which is the development of new technology and process redesign. I have looked extensively into regulation of the chemical industry and have found that the regulations that have occurred to date have, indeed, stimulated new technology. And the corporate vice-presidents will tell you, off the record, yes, we have been able to recoup, yes we have developed new technology, yes, we have ignored polymerization in vinyl chloride, yes, we sold it at a profit.

I am not talking about add-on devices like stack-gas scrubbers. I am talking about new process design. And I'm talking about the fact that the tremendous financial effort that's gone into fight this issue politically could be put into redesigning technology and to make this nation regain some of the technological lead it has lost to Europe and Japan. We are in trouble in this country, ladies and gentlemen. Not because of regulation; we are in trouble because we have been complacent too long. We have not reexamined our industrial bases. The present is concerned with innovation, concerned with technological change. And yet -- the response seems to be "Let's fight the regulation," rather than to ask, "can't we begin to redesign our capital equipment and our production system that will solve

the social problem," as an industrial leader should do. I see I'm being pressured to close these comments and Frank Greer is very persuasive but I will make one more statement and that is, the Congressional bills in Congress to require regulatory impact analysis, even those that are motivated by "a pure heart," are really misplaced. You cannot enter into the cost-benefit matrix how good and large the leveraging effect is.

The benzene decision, if it goes for OSHA so that the cost-benefit decision is not required, will have repercusions that flow far beyond the benzene question. The payoff of regulation is much broader than the individual substance being regulated. We cannot use a myopic technique, analytical economic technique, that was designed for building dams. Thank you.

(Applause)

MR. GREER: That was really an excellent presentation from everyone. I know you're weary but we did want to let you have one opportunity to discuss this issue if there are any questions.

MR. PRINCE: Anthony Prince, Steelworker's Local 65. I'd like to make just a brief comment and then ask the panelists to state their views on it. I've been sitting here listening to the discussion of the cost-benefit analysis approach to production. And I began to think about the slave trade 100 years ago, because some of the first cost efficiency experts who emerged came out of that period. They were able to determine that they could introduce a slave at age 17, work him for seven years like a workhorse and he would die and you could always replace him from the breeding farms, you know. And I think that it was a very efficient system

that they had going there and it produced a lot of benefits to society in the sense that for the first time, everyone in the world had a cotton shirt and a cotton pair of trousers, and the cotton trade and the slave trade was the impetus for the development of British and American industry.

But somehow or other, society made the determination that the cost did not justify the benefit. And yet here in 1979, I'm still able to buy a cotton shirt, I still can buy a cotton pair of trousers. And believe me, sooner or later, society is going to make the determination, no matter what efforts industry makes to attack science and to confuse society, they will make the determination that they can produce the things that human beings need without having to sacrifice the human beings that consume them. I'd like you to comment on that.

(Applause)

MR. ASHFORD: There are certain -- there are two ways to concur with what you're saying. One is that there are certain values that are not priced and there are certain risks that we just don't think are fair trades. And just so that I'm not accused of being bleeding heart liberal who's concerned with workers, let me toss it back in your lap. It's very simple. It's the Halloween apple problem. And that's all the complications you need to realize.

You send your kids out on Halloween, they come back with a bag full of apples. One in 10,000 has a razor blade in it. Now, you've got three choices, you let your kids eat the apples, you throw them all out, or you sit down and you do a cost-benefit analysis to decide -- no, I'm serious -- whether or not you toss it out.

Now, let me tell you what enters into the cost-benefit analysis, the cost of the apple, the nutritional value that might not be covered by the price, the probability of having a razor blade, the probability of cutting your kid's lip, the cost of corrective surgery, the psycho-social costs associated with disfigurement.

(Laughter)

No, this is how you do it. This is how you do it. And when you sit down and it's all over, it's absolutely irrational to throw the apples away. What do you do? You throw the apples away. Are you irrational? No, you're not irrational, you are minimizing the regret that you're going to feel if you go the other way. Your kid can do without the apples, you don't want him disfigured. And that is what we are doing in regulation, we are preventing people from biting into the apples that have razor blades in them. And don't be fooled that it's about anything else.

(Appaluse)

MR. KUSNETZ: Nick, I'm glad you used that as an example, because what we're saying, and the steelworker over here, incidentally, I'm glad that you picked up on the point that I made and tried to make in my remarks, is that society makes a determination on what the relative costs are and that determination and those values change from generation to generation, from decade to decade and from year to year. It is not a single laboratory investigator's determination as to what the determinants should be. It's all of us sitting here and that's exactly the point I try to make. So for reinforcing it, I thank you.

Nick, we don't throw all the apples out on the basis of the theory

that there may be apples -- otherwise the whole apple industry would go to hell and the nutritional value in the apples disappear. On the other hand, we don't glibly hand apples or any other fruit to our children, whether they may contain razor blades or arsenic or other materials without taking certain precautions. Certain efforts and certain value judgments on how we handle apples or anything else have to be made. And we don't have a single, massive rule to take over every possible instance and say, all of our activities are going to be bound by that single rule. We think about the situation.

I've had kids who've come home with apples and other poison toys, and if you recall in Houston a couple of years ago, using your Halloween analogy, there was an instance where somebody put poisoned candy in the Halloween bag. And this being Halloween season almost upon us, maybe that's appropriate, Nick. Does that mean we shut the candy industry down? Does that mean we don't let our kids eat candy? Well, maybe we don't want to let them eat candy anyway, but for other reasons. But we think about the why, we think about the consequences, and we don't necessarily have to do this kind of detailed cost-benefit but we do a form of it.

And that's what I'm saying. We think about the consequences before we act.

Frank, if I have a minute, I'd like to just correct something that's been misstated twice by two of the members of the panel over here, neither of them, I think, were in on the issue when it came up; I was and so let me just make a factual correction. That is the vinyl chloride reference which has been mentioned here a couple of times.

I was on the panel and attended and participated in the first hearings that OSHA had on vinyl chloride in February 1974, when, within a matter of weeks, the cases first broke at the B.F. Goodrich Company -- and Dr. Johnson, I see is sitting in the audience and he can correct me on this.

The industry viewpoint and the statements then that were made were that if the then proposed level of zero or lowest feasible, which presented a constantly changing, diminishing level, were enacted then the economic consequences would be overwhelming. Whether that is so in the light of what we know today or not, I don't know. But when it came back and was resolved at a part per million, none, I repeat, none of the major corporations involved with vinyl chloride said it couldn't be done.

So while you may want to castigate some of the corporations, at least castigate and use the record and the words with the right situation. Don't take the words in one case and apply them to the other.

MR. LOWRY: Well, I guess my comment is that you've deliberately chosen a substantially, emotionally-biased example. It's a common technique in these arguments, it sheds a lot of heat and very little light on the problem. Because there are lots of examples where the trade-offs are not between cotton shirts and slavery but the trade-offs may be between the flammability of a cotton nightgown that a kid wears and the cancer-causing potential of the chemical you've got to treat it with.

You can even find examples that are biased completely the other way, where maybe the benefit is a drug that saves lives and the risks of producing it are very small. The problem is that you have to look at those trade-offs, figure out what they are and make them. We are not yet,

unfortunately, in an economy where we can supply everybody with everything. Maybe some day we'll get there.

MR. WRENN: I think the thought that your example provokes in my mind is one of whether those members of society who are asked to, or forced to bear the risks of decisions of others, have the opportunity to know fully what the risks are that they're bearing and to participate in that decision process.

And I think we heard earlier in this meeting and surely I will amplify the concerns for the fact that throughout much of American industry today, even when they ask, even when they try to use the leverage of their collective bargaining agreement to gain access to the simple knowledge of what is this chemical that I'm working with, tens of thousands and millions of workers are denied, routinely denied access to that information.

Now, that's not to say that no employers in this country act differently. Many do. But many do not. And the issue of the right to know what the risk is and to make some assessment on our own behalf as to whether we bear that risk or ask others to join with us in helping reduce it, is an important and too often missing element of the decision process in this country today.

I would also like to correct the record on vinyl chloride, and you may consult the publications because you're going to get a factual dispute here. The Occupational Safety and Health Administration never published a proposed regulation to reduce worker exposure to vinyl chloride to zero. The Occupational Safety and Health Administration published a proposed regulation to limit worker exposure to one part per million, in parentheses, as low as feasible. Because at that time it was deemed that that was as low as could feasibly be measured. But the regulation was always proposed in terms of one part per million and was finally issued that way.

MR. KUSENTZ: That was subsequent to the February hearings that that finally came out. But the comments, again, I'm going to take the fact question here. It's in the record, Grover.

MR. GREER: I would invite everyone to write OSHA and you can get a copy of the record. I've read it too, Howard, and I think Grover's right. Are there other comments? Because I think our time is basically up. I want to take one opportunity, number one, to thank all the participants. It's been an excellent conference. I would invite your comments. I would invite your criticism or suggestions for the future in terms of doing these conferences.

Let me take one moment, though, to express a concern. I was called off the stage by Dr. Bingham and she said to me, that, we've tried to work very closely with the American Industrial Health Council, they've been deeply concerned about the balance of this program. And unfortunately, there was a luncheon today. It was not an open forum or a part of this

conference, nor were the issues that were raised in that luncheon raised here by the American Industrial Health Council. But instead there were issues like the accusation that the cancer policy, which doesn't regulate any substance, is going to cost American busines $100 billion. Now, that's a figure that came out of a study that they proposed -- and was done -- based on industry figures. It was a study that I don't believe that one journalist picked up on, about a year ago.

But that figure was brought up again and not here, but in a luncheon sponsored by the American Industrial Health Council. And my fear is that -- in the field of cost-benefit analysis -- exaggerated figures like $100 billion for regulation that doesn't even regulate a substance, is really a disservice to the debate that we're trying to carry on in this country to protect worker health and safety.

So I', sorry it happened, I hope we can continue fighting this battle in the future. And we welcome any input that any of you would offer the Agency. Thank you.