November, 1956



PLAINTIFF'S EXHIBIT

21st ANNUAL MEETING

INDUSTRIAL HYGIENE FOUNDATION

Transactions Bulletin No. 30

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MELLON INSTITUTE
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Pittsburgh, Pa.

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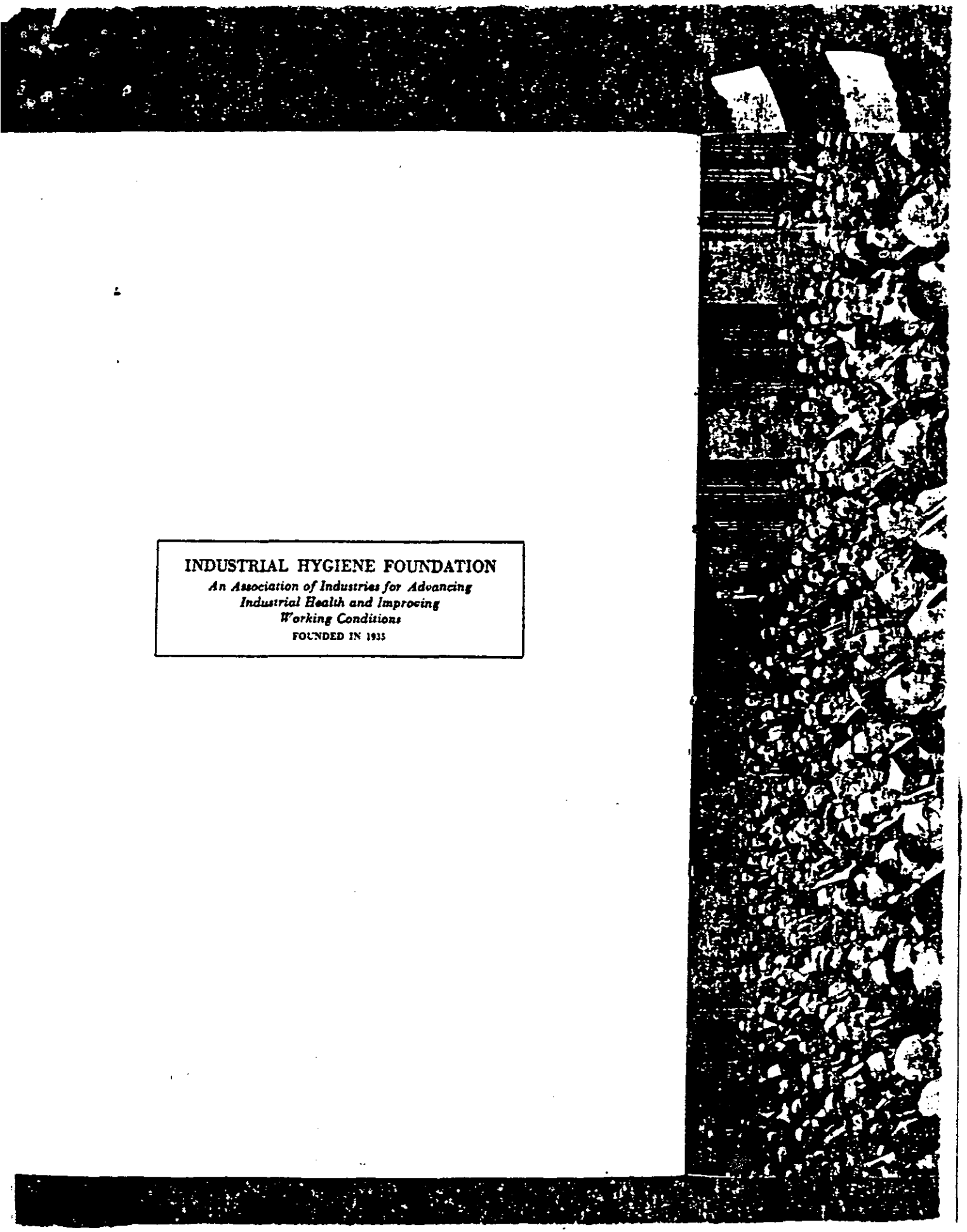
INDUSTRIAL HYGIENE FOUNDATION OF AMERICA

HELD AT

MELLON INSTITUTE
PITTSBURGH, PA.

NOVEMBER 14 AND 15, 1956

MANAGEMENT, MEDICAL, LEGAL,
CHEMICAL-TOXICOLOGICAL,
ENGINEERING, AND JOINT TECHNICAL
CONFERENCES



INDUSTRIAL HYGIENE FOUNDATION

An Association of Industries for Advancing Industrial Health and Improving Working Conditions

FOUNDED IN 1935



Capacity attendance filled the Mellon Institute Auditorium at both the Management and Joint Technical Conferences.

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and error does have its advantages, at least if there is not too much error. Without gradual improvements pressures are built up. Extreme remedies may then be suggested. These may well seem satisfactory to only a few. Let us have evolution rather than drastic change.

SUMMARY OF OCCUPATIONAL DISEASE LEGISLATION—1956

Congress S.2280 (Public Law 803—84th Congress) effective July 26, 1956, increases benefits under Longshoremen's and Harborworker's Compensation Act—revises provisions as to special fund.

Kentucky .....S.B. 98 (Chapter 342, Laws of 1956) effective August 1, 1956, revises occupational disease provisions.

Maryland .....S.B. 85 (Chapter 94, Laws of 1956) effective June 1, 1956, lengthens statute of limitations in case medical care is furnished.

Massachusetts ..H.B. 3140 (Act No. 602, Laws of 1956) effective November 4, 1956, revises rehabilitation provisions.

New York .....S. Int 1588 (Chapter 696, Laws of 1956) effective March 1, 1957, enacts volunteer firemen's benefit law.
Int. 3874 (Chapter 697, Laws of 1956) effective May 1, 1956, enacts amendments to volunteer firemen's benefit law.

Pennsylvania ...H B 1397 (Act 355, Acts of 1955) effective March 29, 1956, revises Occupational Diseases Act.
S.B. 235 (Act 488, Acts of 1955) effective September 1, 1956. Amends Occupational Disease Act with reference to coverage of tuberculosis.

Workmen's Compensation Study Commissions

Massachusetts ..H.B. 2923
Maryland .....(appointed by Governor)
Michigan .....S. Res. 43
New York .....(Moreland Commission)
Virginia .....H.J.R. 91 (Public Officers)

Atomic Energy Study Commissions

Massachusetts ..S.B. 723, S.B. 791
New Jersey .....S.J.R. 11
New York .....A. Res. 206
Ohio .....H.R 215X
Rhode Island ...H.B. 937
South Carolina ..S.B. 531
Virginia .....S.J.R 10

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Industrial Air Cleaning was the theme of the Engineering Conference. Program participants were, left to right: Robert T. Pring, Technical Director, Dust and Fume Control Division, Wheelabrator Corporation; Dr. Leslie Silverman and Dr. Philip Drinker, Harvard University School of Public Health; Arthur C. Stern, Robert A. Taft Sanitary Engineering Center, U.S. Public Health Service; William B. Harris, Health and Safety Laboratory, U.S. Atomic Energy Commission; and John M. Kane, Manager, Dust Control Products, American Air Filter Company.

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JOINT TECHNICAL CONFERENCE

Chairman and Moderator: V. P. AHEARN
Executive Secretary,
National Industrial Sand Association

Answering questions on health problems involved in the manufacture, sale and use of toxic materials at Joint Technical Conference were leading authorities on various aspects. Panel participants are, left to right: Dr. L. C. McKee, Medical Director, Hercules Powder Company; Dr. P. W. Bachman, Vice President and Director of Research and Development, Koppers Company, Inc.; H. S. Baile, Deputy General Manager and General Counsel of General Accident, Fire and Life Assurance Corporation, Ltd.; C. R. Oviatt, Legal Department, Union Carbide and Carbon Corporation; Dr. John A. Zapp, Jr., Director, Haskell Laboratory for Toxicology and Industrial Medicine, E. I. du pont de Nemours & Company, Inc.; Theodore Hatch, University of Pittsburgh Graduate School of Public Health, and Research Adviser to the Foundation; and V. P. Ahearn, Executive Secretary, National Industrial Sand Association.

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HEALTH PROBLEMS INVOLVED IN THE MANUFACTURE, SALE, AND USE OF TOXIC MATERIALS

A Panel Discussion

MODERATOR:

V. P. AHEARN
Executive Secretary,
National Industrial Sand Association

PARTICIPANTS:

P. W. BACHMAN, Ph.D.
Vice President & Director of Research & Development,
Koppers Company, Inc.

H. S. BAILE
Deputy General Manager and General Counsel,
General Accident, Fire and Life Assurance Corporation, Ltd.

THEODORE HATCH
University of Pittsburgh Graduate School of Public Health; and
Research Adviser, Industrial Hygiene Foundation

L. C. McGEE, M.D.
Medical Director,
Hercules Powder Company

C. R. OVIATT
Legal Department,
Union Carbide and Carbon Corporation

JOHN A. ZAPP, JR., Ph.D.
Director, Haskell Laboratory for Toxicology and Industrial Medicine,
E. I. du Pont de Nemours & Company, Inc.

MODERATOR V. P. AHEARN: I would like to tell you something about the procedures for the operation of this panel. A list of questions has been prepared on the subject before us today, and copies will be distributed to the audience. Two members of the panel in most cases have been asked to be prepared to be called upon. That doesn't mean that other panel members are not supposed to participate. I want to make it clear that panel recognition is not necessary by the Moderator for contributions by members of the panel whose names do not appear at the left-hand side of the question. Each participant is supposed to add to the contributions made by the other members of the panel whenever in his judgment there are additional

and Industrial Accident, Fire and Life Assurance Corporation; Dr. John A. Zapp, Jr., Director, Haskell Laboratory for Toxicology and Industrial Medicine, du Pont de Nemours & Company, Inc.; Theodore Hatch, University of Pittsburgh Graduate School of Public Health, and Research Adviser to the Foundation; and V. P. Ahearn, Executive Secretary, National Industrial Sand Association.

contributions to be made. The panel participants met this morning to look over the questions and to discuss the program.

After the recess, at 3:30, we propose to give priority to questions asked from the floor rather than to the written-out questions. We hope that there will be floor discussion even if we haven't answered all the written questions, because we want to establish the town hall atmosphere and to give each of you an opportunity to ask a question, to make a contribution, to challenge a member of the panel, or do anything else that your democratic instinct suggests you do.

The first question which I am going to ask the panel is: "How does one define 'health problems'? What is meant by 'toxic material'?" I am going to ask Dr. McGee to answer that question.

DR. McGEE: In a broad sense, one might say that any deviation from optimum physical, mental, and social well-being is a health problem. That definition of health as the optimum state of mental, physical and social adjustment has been batted about for a number of years. I believe for the purpose of this afternoon's contribution, however, the health problems involved should be limited to those deviations from optimum health which occur as a result of an exposure in manufacturing, sale and use of something which is called "toxic material."

As the title is stated, of course, any deviation in health of a worker would react on his work in output, and so forth, in a broad sense. But I believe the meaning here is in a more limited sense of those deviations from the optimum physical, mental, and social adjustments which result from the contact with this thing called "toxic material."

Passing then to the second part of the question, "What is toxic material?" we are in trouble immediately. I find very few people, outside of those who are concerned with deleterious substances as they affect man, who have a concept of the large range in degree and character of toxicity. It is a word which means what anybody wants it to mean.

Unfortunately, to substitute for "toxic," "poisonous," "deleterious" or what have you, gets us no place. It so happens that everything with which man is in contact can be troublesome and "toxic" if he gets too much. Those things that we consider essential to life, including food, vitamins, minerals, and water, can be "toxic" to man. I believe Dr. Henry Smyth, Jr., defined "toxic" simply as a matter of too much. If we keep that in mind, we will realize then that we cannot circumscribe a certain group of materials and say these are toxic, others are not toxic. I must admit, and possibly Dr. Zapp can

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DR. ZAPP: I can only express my agreement with the remarks that Dr. McGee has made. The term "toxic material" is subject to very many interpretations by different people. The great difficulty that we have in talking about them and in drawing up laws and procedures to govern the use of toxic material revolves about the definition of toxic material.

Dr. McGee was quoting to you just a few moments ago from the report of the Council of Toxicology of The American Medical Association, in which are reviewed the various definitions of poison. (The Council found that there was no uniformity.) As a matter of fact, it states that there is no uniformity of legal or scientific opinion as to what constitutes a poison.

And then, since a precise definition that would fit all circumstances is not possible, the Committee felt that any substance that when improperly used may produce harm by chemical action, should be provided with an appropriate cautionary label or statement, et cetera. So, here, we have not only difficulty in defining what we mean by toxic material, but also a concern on the part of this group forwarning of the consequences of misuse. I think what we really mean to talk about this afternoon is more properly defined as hazards, that is, the probability that an injury will occur in the manufacture, sale, or use of these materials.

MODERATOR AHEARN: Thank you very much, Dr. Zapp. Now, I move on to the second question, unless at this stage a member of the panel wishes to add something to what these two gentlemen have already said.

You football men will notice I am playing a seven-man lineup on this platform. I am going to ask my right tackle, Dr. Bachman, this question: "Do you think there is any basic difference in safety as applied to people in research and development in comparison with people involved in regular production operations?"

DR. BACHMAN: I think this question in the first place refers to an approach to safety. In that respect, I will try to pass an opinion.

I think there is a considerable difference in the safety that one encounters in the laboratory and that which one encounters in the plant. In a plant in the regular production operation, it is possible for the engineers to break a process down into many component parts and study these parts from the point of view of safety; the different operations can be adequately safeguarded. I think there is not very

much difficulty in this, and it is rather rarely that we have accidents of any significant nature in processes that are continually operating in a repetitive manner. I think that is rather easy to control, and it is more feasible to train the operators in safety measures.

Now, in contrast with that is a research laboratory. The men in the laboratory are frequently working in unexplored and unknown areas. They may or may not, and probably will not, know the toxicological or hazardous explosive properties of the materials with which they are working or of the materials which might be formed as a result of their researches. So, here, you have only a few of the general rules of safety that apply. I think a great deal of it in the case of the research man depends entirely upon him. I think his approach to it must be one of safety consciousness. I think he has to really live safely and to be effective this has to be a part of his background, a part of his disposition.

MODERATOR AHEARN: Thank you, Dr. Bachman. Now, Mr. Hatch.

MR. HATCH: I certainly agree with everything he said except the second point, attitude. Certainly, it is true that the people who are doing the basic research and development work should incorporate into their day-to-day thinking the needs with respect to safety to a greater degree than people out on the production line. However, it has been my experience, and I am sure many of the rest of us here have had the same experience, that very often we find it just the other way around. The man who is doing research is so wrapped up in his research objective that he is inclined not to give very much consideration to these other matters.

I can recall visiting laboratories where, for example, they were using such a well-known agent as benzol and were slopping it around like water. At the same time, they might be quite concerned over the toxicity of the new and exciting material that they are developing. So, I am sure it is important to make sure that in the course of research and development, these questions are constantly raised, but I don't think we can rightly assume that the research people are always going to raise them.

MODERATOR AHEARN: Thank you, Ted. I want to remind the panel that other contributions are always welcomed.

MR. BAILE: May I interject one comment? The very distinction that both gentlemen have made between the research operation and production operation suggests the desirability of a slightly different approach to the safety program with respect to operation. In

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the production operation, you are dealing with guarding against the individual, isolated accidents in the course of production, whereas, in the research operation, you are concerned with the catastrophe problem. Therefore, your program in that respect should be designed to provide for the type of action required in the event those catastrophes occur.

MODERATOR AHEARN. Thank you very much, Mr. Baile. The next question gives us a chance to break out our legal talent up here. "Does not the obligation of the insured under a Products Liability Policy, particularly his agreement not to settle with a claimant nor to admit liability, interfere with a manufacturer's relations with his customers and with the public?"

Mr. Baile, you can be the first one to answer that question.

MR. BAILE: I believe the simple answer to the question is that it should not. I think at the same time you have to recognize that there is an apprehension on the part of some people that it does. In order that it shall not interfere with customer and public relations, I think it is of utmost importance that there be understanding on the part of both the insurer and the insured, and also that there be the utmost cooperation between the two.

The basic understanding that has to exist is to recognize the distinction between customer complaints on one hand and claims on the other. Customer complaints must be a concern of the insured, the manufacturer himself. He must be free to deal with customer complaints as you deal in business relations, without necessarily being concerned with the legal basis of the claim or the legal possibilities that might arise out of your action.

On the other hand, it is most important on the part of the insurer to recognize that the insured must be free to act in that way; that he must be free to deal with a customer in order that he will have a satisfied customer. Since that is the interest of the manufacturer, he can't restrain that action in order to protect his legal position. The interest of the insurer and the insured must be recognized as an identical interest. They are not two parties: they are one party serving one aspect of the insured's business, which is his relation to the customers insofar as they are affected by his products.

I hope I don't sound idealistic speaking as an insurance man on that subject, because I think it is the actual practice of every company of standing to operate in the handling of products liability claims in precisely that way. If it is done that way, then there is no interference with the company's relations with the public, the customers.

MODERATOR AHEARN: Thank you. Dr. Zapp. will you comment?

DR. ZAPP: Well, I can't speak on this topic as a lawyer or as an insurance man.

It does seem to me that there are two separate concepts involved in this question. One concerns the mechanism of settling claims which presume that there has been an injury for which the plaintiff seeks to recover damages. The other part concerns the relations of the manufacturer with his customers and with the public.

Now, it seems to me that the manufacturer has a very definite responsibility to his customers and to the public, and that is to point out to them how his product can be used with safety. Nothing can interfere with that responsibility on the part of the manufacturer. If, however, a claim arises which suggests either that the manufacturer's statements were inadequate or in error, then you have this question of deciding about liability, which I feel is a separate matter.

MODERATOR AHEARN: Thank you, Dr. Zapp. The next question is, "What information respecting physical and chemical properties and toxicological properties of the material does the industrial hygienist need in order to develop the hazard control program?" Mr. Hatch.

MR. HATCH: The answer to this question is very easy. You get all that is available. There is one very important aspect of this question as to what information concerning physical and chemical and toxicological properties that the industrial hygienist needs. The implication is that there is information with respect to the toxicological properties of the substance obviously essential to an understanding of the hazard. That doesn't tell the whole story, however. There must be added to this question; what information does he need also with respect to the way in which the process operates in which this toxic substance is to be used? It is important for us to keep in mind that there is a very real difference in toxicity and hazard. Here is where the physical and chemical properties as well as the toxicological properties come in.

We know, for example, that two substances may be equally toxic but quite different in respect to hazard. Thus, it should be the industrial hygienist's responsibility to accumulate all the information that is available, and it should be his responsibility to digest this information and determine to what extent more information is needed, because he can't limit his responsibility by simply saying that only so much is known about the substance and, therefore, decisions have to

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MODERATOR AHEARN: Dr. McGee.

DR. McGEE: Accepting the suggestions that Ted Hatch has given, I wonder if he would admit there is a practical shortcut which is useful in human exposures to some materials. I refer to the fact that if you have an explosive hazard at a concentration in air well below that causing a definite, clear-cut, biological effect, it is a simple and good operating rule to take the lowest concentration needed as a guide. You may disregard certain properties which are evident only at levels above that level which can be tolerated for reasons of safety.

MODERATOR AHEARN: Thank you very much, Dr. McGee. There are two questions on the list which bear essentially on the same points and we will therefore discuss them jointly. They are:

1. "What is the liability of a manufacturer of a toxic chemical who sells it in bulk for packaging and resale by the purchaser under his own name or brand in the event of an injury to an ultimate consumer?" and,

2. "What liability does a company have for its product if an adequate warning label is placed on the container but the ultimate consumer either does not read the warning label or does not follow its instructions?"

I am going to call on Mr. Oviatt first.

MR. OVIATT: If the manufacturer adequately warns a reseller of the toxic nature of the material either on the label or otherwise and of the care that should be used in handling it, he is not liable if the reseller fails to put such warning on the package when he repackages it and sells it to the public. Of course, if a manufacturer should find out in any one of numerous ways that the reseller is failing to put the notice or the warning or any material part thereof on the packages, then he should call the reseller's attention to it. If the reseller persists in disregarding those warnings, then I believe that he should stop selling it to him for his own safety.

Of course, what should go on a label depends greatly on the class of trade to which any product is sold, the knowledge of the people who are going to use it, the chemical knowledge and results that might come from mishandling. So, you can't say a label has to bear thus and so for the entire general public. And that would also control to a certain extent, what should go on a label to a reseller. It is what knowledge he may have of the chemicals sold and what he should advise his purchasers as to the method of use.

MODERATOR AHEARN: Thank you very much, Mr. Oviatt. Mr. Baile.

MR. BAILE: I think in answering the first of the two questions, you have to make a distinction between chemicals which are toxic as a normal attribute of the chemical itself on the one hand, and on the other hand the chemical which is toxic as a result of some danger-creating defect that exists in the chemical which would normally be harmless.

Now, I think Mr. Oviatt's answer is primarily directed to the first class where you are dealing with the chemical which is naturally toxic. Under those circumstances, when the purchaser is given full knowledge of the toxic character of it and the dangers that are inherent, or the purchaser, without your telling him, has that knowledge, I don't think there is any liability on the part of the manufacturer.

However, where the toxic character of the chemical is created by some defect in the manufacturing process, then I think there is liability on the part of the manufacturer.

I don't think we are going to permit manufacturers to insulate their own carelessness in the manufacture of their product against consumers by the intervention of a middle man.

MR. OVIATT: Mr. Baile, after all, the question was what is the liability of the manufacturer of a toxic chemical. Now a chemical is either toxic or not toxic, is that right?

MR. BAILE: Not according to my friend at the beginning of the meeting.

MR. OVIATT: If a chemical becomes toxic because of the defect, that isn't the subject of our meeting today, is it? I thought we are just speaking of materials that are inherently toxic without any defect producing toxicity.

MODERATOR AHEARN: I believe it would be helpful to the audience, Mr. Baile, if we had more pointed discussion of the second half of this question, because it seems to me it is a question which most people in this audience are very much interested in. Will you point your remarks specifically to that question?

MR. BAILE: As Mr. Oviatt pointed out, the basic consideration in imposing liability upon a manufacturer of a chemical, which in its nature is toxic, is the obligation that is imposed upon him to disseminate the knowledge that he has of the dangers to the purchaser. Now, his only method of doing that in most instances is through labeling

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the product with an appropriate warning, stating prohibitions against particular use and providing an antidote in the event harm is encountered. Having done that, there is not much more he can do.

If, therefore, he meets that requirement—puts an adequate warning on his product—the unwillingness of an ultimate user to take advantage of the knowledge that has been made available to him, either refusing to read it or failing to understand that which is clearly understandable does not create a liability. On the contrary, it constitutes on the part of the consumer, the party injured, a fault which would bar any right of recovery that he should have against a manufacturer.

MR. OVIATT: On the other hand, what you are really saying is that the manufacturer does not have to police his customers.

MR. BAILE: I think that is a fair statement.

MODERATOR AHEARN: I believe the audience appreciated that additional contribution from both of you.

By the way, I forgot to say in opening this meeting that at the request of the panel, I want to make it clear that the members of the panel are speaking only for themselves as individuals and are not to be regarded as committing their companies in any way. I think we may assume that they and their companies are fairly close together.

We will go on to the next question now: "In what way can the producer of a toxic substance aid in securing its safe use by education, research, and development of control measures?" Mr. Hatch.

MR. HATCH: We agreed in a preliminary panel meeting this morning that this question answers itself. The point is, how can we get the producer to recognize and accept his responsibility?

We have many examples in which the manufacturers of toxic substances have recognized and assumed responsibility in this respect, even to the extent of requiring the customer to show evidence in advance that he has made adequate provisions for the safe handling of the material before they will supply it to him.

I recall when I was with the New York Labor Department that one company which was producing and distributing a highly toxic material required every potential customer in New York to get the approval of the State for their proposed control. In the case of another toxic substance one of our large chemical companies has set up an elaborate program of education of the ultimate consumer of the material, in recognition of the very important fact that, without adequate safety measures, serious difficulties were bound to result.

I would like to turn to the last item: the development of control

measures. There is a particular responsibility and opportunity here on the part of the producer because, as I said earlier, the hazard can be magnified or minimized for a given toxic material by the manner in which the process equipment operates. It is the responsibility of the producer of such materials to take part in the development of safe-process equipment so that he will be in a position to advise his customer on the kind of equipment in which he is to use this toxic material.

MODERATOR AHEARN: Thank you, Ted. Dr. Bachman.

DR. BACHMAN: I can only add to Mr. Hatch's remarks by calling attention to an action one company is taking. They bring in the customer's employees who are going to use this material and give the employees of the customer a course in the handling of it. Now this, I think, is an excellent approach when you get to extremely hazardous conditions. I don't know of anything that you can do beyond that.

MODERATOR AHEARN: Now we come to two questions which the panel believes should be grouped together also: "What procedures should be followed to determine whether any of the plant personnel are abnormally sensitive to toxic materials. In conjunction with that: "How is a health problem to be anticipated? Recognized? Proved?" Dr. McGee.

DR. McGEE: In general, there are certain principles which some of us feel should be followed.

In the first place, we must know as much as we can about the biological action of the material concerned. We like to know how it can affect the animal with which we are primarily concerned. There may be a species variation, such as the rabbit story Ted Hatch mentioned. The full story of biological action involves some understanding of the molecular structure; action at a cellular level; the details of the chemical, metabolic and other changes brought about in the body, to the extent that our research methods and our understanding of metabolism of the body allows us to define those things.

Secondly, from the standpoint of man, the worker, it is quite essential that we know who in the plant has a deviation from his optimum state of health, when, where and why. We are not able to recognize or anticipate a health problem unless we know what to look for, and actually do look periodically at this crucial and continuing experiment in which the worker is involved. To accomplish that, we must know what his situation healthwise is when he starts to work (before exposure) and at intervals thereafter.

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when using a new material, examine the worker at rather frequent intervals until they define for themselves:

1. That the average person does well under the circumstances and the control situation that exists at the plant; and

2. That in a sufficient experience they have not demonstrated an unusual sensitivity.

I refer not only to the entire group of allergies, but to some of the idiosynerasies which are not too well understood.

A part of this recognition of a hazard involves other than basic knowledge, orientation and thinking about it day by day. A responsible individual reviews some of the possibilities which may be overlooked and checks and double checks to see if they are actually occurring. If you don't look, I will assure you that the experience of most of us is that you can miss them until they force themselves on you. By looking carefully for an untoward reaction you may find it earlier than otherwise.

MODERATOR AHEARN: Thank you. Now, Dr. Bachman.

DR. BACHMAN: Once again I am in a position of backup man with very little to say on the subject, because I think Dr. McGee has pretty much said what can be said. I do note that the point at which most of the conditions arise or appear is at the start of a new plant. I think it is only by following the points as made by Dr. McGee that one can discover or uncover the abnormal sensitivity of a person. The only thing that I know of that could be done is to remove the man from the action and pray that he doesn't get worse.

MODERATOR AHEARN: Thank you, Dr. Bachman. Mr. Hatch.

MR. HATCH: I would like to add to what Dr. McGee said. In addition to the continuing observations on the men for the purpose of identifying a problem area, it is equally essential that there be parallel studies on exposure. The ultimate purpose is to compare the one with the other. So don't forget that it is the two together, the man and the environment, that have to be studied continuously in order to reveal significant relationships.

With mechanization and automation the maintenance people in a plant become more and more important. There are more of them in proportion to production men and difficult problems arise with respect to them because their exposures are so varied and uncertain. Thus, systematic and continuing studies are even more important.

DR. ZAPP: I should like to comment on a suggestion that is frequently made; that is, why can't we detect the abnormally sensi-

tive individual by some sort of screening test? For dermatitis, for example, why not a patch test before he is put into contact with the suspected material on his job?

Generally speaking, we do not recommend this procedure. I believe one of the biggest scale attempts at this sort of thing was the testing of volunteers with mustard gas at the beginning of World War II. A great many were tested in an effort to determine individual variations in sensitivity. One consequence of this program was that some of the men were sensitized to mustard gas and therefore reacted abnormally whenever they came in contact with small concentrations. So, it is not a practical procedure to weed out the hypersensitive by a preliminary testing program if we are dealing with a sensitizer.

The other comment is that we can anticipate certain types of difficulty. For example, suppose we are dealing with a chemical that produces kidney injury. It would not be wise to expose a man who has only one kidney; he might very well be abnormally sensitive. And that brings up the importance of an adequate, preplacement medical examination and a classification of a man as fit or unfit for a certain type of exposure.

DR. McGEE: May I add one thing which I think is important? It is the absolute necessity of a critical attitude in tying down the diagnosis. I know of a few areas where it is more important to cross-examine a diagnosis and prove it to the extent that it is possible to prove it than in occupational disease. The very act of having a high index of suspicion when supervising an operation with a potential hazard sometimes leads to false diagnoses that can be troublesome.

I am reminded of the incident of the plant physician who was aware that a chemical could be a sensitizer of the skin and lead to a dermatitis. He showed me a case of a very stubborn dermatitis, stubborn because the man had been removed from the exposure for six months and still had the skin lesions. I was visiting the plant at the time. I had a hunch of a different diagnosis when I saw the man's lesions, partly because I was not expecting contact dermatitis, as was the plant physician who lives with the problem every day. I asked the patient if there were members of his family who had similar skin trouble. There were two members who had similar complaints. The diagnosis proved to be scabies for all three of the patients.

MODERATOR AHEARN: Thank you very much. We will go on to the next question. "Does the usual Products Liability Policy cover any and all liability that may be imposed upon a manufacturer for damages resulting from the use of his product?

MR. BAILE: I think the answer to that question is obviously no.

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First of all, it does not cover any liability in excess of limits that are provided in the policy. Second, it does not cover the liability that might be imposed upon a manufacturer for damage to the product itself. That liability is excluded in the normal policy. Third, most product liability policies are written on what is called "accident basis." They cover liability imposed upon the manufacturer for damages arising out of the use of a product, caused by accident. Accident is used there in the sense of some event which is identifiable in point of time and place of occurrence, as distinguished from adverse effects which are cumulative over a long period of time or over a great amount of space. For that reason, it is very important, and particularly when you are considering the exposure of a manufacturer to a liability resulting from toxic effects of the products, that you keep in mind that a policy which is written on the usual accident basis is not a satisfactory policy for your purposes. In that instance, you should be certain that your policy is written on what insurance men choose to call "occurrence basis," as distinguished from an "accident basis."

I thing in one other instance the fact that it is on an accident basis is important, because that also is designed to exclude any coverage of the results of business decisions that might be made. It is pretty difficult to illustrate that in a case of products. I think it is more apparent in the case of general liability policies. You take the road contractor who has two methods of tearing up an area. One method is a little cheaper for him, but it involves exposing surrounding properties to damage by shaking or noise or something like that. The other method, which might cost him a little bit more money, would avoid that. With that knowledge, he proceeds to follow the less expensive method. That is a business decision the company has made.

MR. T. C. WATERS: May I ask one question as to that? Why do not insurance carriers write policies on a broader basis so they get beyond the concept of accidents?

MR. BAILE: I think to answer that question you have to start out with the premise that the insurance company, if it could, would be very happy to write policies on a completely broad basis. They would be very happy to insure the total liability of industry. To do that, of course, we would have to receive the total income of each company individually, which you would be unwilling to pay by way of premium. Therefore, it is the question of balancing the risk that you have been exposed to against what you are willing to pay for, not necessarily willing, but what you can reasonably pay for.

So it is a question of isolating those hazards which are most common to industry generally and covering them, and excluding the

specific hazards of a particular company or industry which are subjected to a much greater hazard than any other part of that industry or any other industry.

The second answer to the question, however, from the standpoint of products liability, is that the insurance industry in general will write the policy on an occurrence basis. What they are going to want to know in a particular industry is what are the hazards to which that company is exposed? And they will try to measure the rate that they charge in the light of those hazards. But, as an additional point, for the company that is exposed by virtue of the nature of its product to damage arising out of the toxic effects, it is most important that they should have their policies written on the occurrence basis. I think in the main it will be an insurable risk on an occurrence basis.

MODERATOR AHEARN: Dr. McGee.

DR. McGEE: I disclaim any knowledge of product liability policies. As a physician, I would hope that no device or arbitrary factors would ever lessen the desirability and need for a manufacturer to know those things about his products which are reasonable and which he should determine prior to their use.

MODERATOR AHEARN: Thank you very much. The next question is: "Inasmuch as your industrial experience has been quite broad, what, based upon that experience, do you think constitutes the average corporate philosophy concerning management's responsibility for the safety and protection of its employees?" Dr. Bachman.

DR. BACHMAN: I think this is rather an interesting question, and, of course, can only be answered on the basis of one's own experience; and I think in arriving at any statement or any thought concerning what the average corporate philosophy is today, one must review what has happened over the course of one's lifetime. The general approach to safety 30 years ago was quite different from what it is today. The companies that were mostly interested in the safety of their men were, in a large measure, those companies where you had sort of a paternalistic feeling between the owners of the company and towards their men. I don't think there was much of a concerted effort for safety. Some, perhaps, but not too great.

Then as time went on and we grew, we have had a change in economic and sociological conditions. I think we have had management people, as a whole, become much more socially conscious towards their fellow man and conscious of their obligations to him over this 30-year period. That has created a great deal of difference in the approach to developing safety measures for employees.

In addition, I think managements over the years have recognized that safety is economically sound for a number of reasons. It has a very definite monetary value when you consider our competitive economy. Processes have grown more and more complicated; new products have appeared. This has caused the management to spend more money in order to build plants which inevitably have become complicated.

With the plants becoming more complicated and the production increasing, it has been very desirable for the management to see that they obtain the highest quality of work and the most skilled workers that they can. The skilled worker became a very intricate cog in the production wheel, and it was certainly most desirable to protect him in the best possible manner, to look out for his health and be sure that he worked safely. The loss through accidents or through some fatality would be serious, and, actually, mean a lot in dollars in production time and production effort. I think this social consciousness and these other two factors have gone a long way in improving our approach to better and safer working conditions. Furthermore, money has been saved, and this has been well recommended in the savings in the workmen's compensation fees.

Again, I think another factor that makes it worthwhile for management to have a very favorable attitude towards safety is that it increases and improves the morale of their workers, and I know in our organization we have a saying, "A safe plant is rather a happy plant." And usually, if you have a happy plant, you have your least difficulties and you get your best work.

From my own experience, I would say that whereas in bygone years when one approached expenditures for safety purposes, the question might be raised, "Is this necessary?", the attitude taken today by most corporate managements is, "Will this do good? If it is likely to do good, then put it in." I think this is rather characteristic in my experience.

MODERATOR AHEARN: Thank you very much, Mr. Oviatt.

MR. OVIATT: Dr. Bachman has pretty well covered the subject. I don't know that all those who were safety conscious 25 or 30 years ago were paternalistic, but there has been a definite change in philosophy. Twenty-five or thirty years ago there were small infirmaries that companies established with part-time medical personnel, and they sat back waiting for accidents to happen.

Now they try to prevent accidents. They go to great lengths and spend great sums of money to prevent accidents, and I think this is true of most of the large corporations. Every year large sums of

money are spent on fully-equipped hospitals in the plants and in the office buildings. They have periodical examinations made of their employees. They have safety programs and training programs for the supervisors in the plants.

All in all, industrial medicine has become a large part of the medical profession and a very important cog in an industrial organization. I know from experience that the presidents of some of the divisions of large corporations put up trophies to be competed for by the plants to see who can have the least lost-time accidents over a period.

While the accident statistics may not bear out the statements that have been made, nevertheless, there is that consciousness and a striving all the time for bettering their record; and I think the records over-all are being bettered every year. As long as employers are conscious of this safety and what it will gain, not only in a monetary way, but in a happy, well-knit organization, they are not going to let up just because they have arrived at some degree of safety. I feel that is the philosophy today.

MODERATOR AHEARN: Thank you. Now we will move on to another question: "Have there been recently substantial changes in the law respecting the liability of a manufacturer to one injured by his product?"

MR. BAILE: That term "recently" is a relative term. If I would treat it as meaning in this century, I would say yes, there have been what you might call substantial changes, a change in concept and a change in application of principle.

Prior to 1916, generally in this country, you would have heard the rule stated that a manufacturer has no liability for injuries resulting from the use of his product beyond persons who are in direct contractual relations with him. In 1916, by the famous decision of Justice Cardoza, that principle was finally broken down and in lieu of it was adopted the rule: if a manufacturer would recognize that a defectively made product of his involved an unreasonable risk of harm to remote users or persons in the vicinity of remote users, that then he was under duty to make it carefully and from that has grown the general principle now, that manufacturers are, in the main, liable for defects in their products or for hazards against which they can guard, even to those persons who have no contractual relationship with them.

Probably more important than that has been the change in the application of that rule. Needless to say, in any claim by remote users against a manufacturer, the problem of causation is a serious one. A

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manufacturer may make his product at one place and it may travel through many hands over much territory and during a long period of time before it becomes a factor in somebody's injury. The problem is then to determine whether or not some activity on the part of the manufacturer was the cause of that injury. In the main, in the past years our courts required rather specific proof of casual relationship. If there has been a major change of our law, it is the tendency of our courts—and I am one of those who thinks it is a very undesirable and unfortunate tendency—to accept what I call hypothetical or questionable proof of relationship between cause and injury. I think those two main changes that have occurred have been very substantial changes and have greatly broadened the scope of the liability of the manufacturer.

MR. OVIATT: I have very little to add. The concepts of noncontractual relationship has been broadened the last few years. I think the courts are inclined to stretch that doctrine perhaps sometimes a little too far, but that old doctrine of McPherson vs. Buick Company has opened a new thought on this question of liability, which I think is all right as long as they don't take it too far.

MODERATOR AHEARN: Thank you very much. Now, we will go on to the next question: "What are the possibilities of changing process equipment or methods of manufacture or use of a toxic material in order to reduce the potential hazard?"

MR. HATCH: I should like to speak at great length on this point, but we don't have the time. It is a very important point. There are great possibilities for changing a situation from one of great danger to one of relatively little danger through the proper design or choice of process equipment. I don't know of anything more frustrating than to work on a plant problem and to realize, while wrestling with it, that it should never have existed in the first place. Somebody along the line failed to give proper attention to the selection of the right kind of equipment so as to avoid the problem. I feel that the industrial hygienists who, up to now, have been largely concerned with hazard control though application of ventilation and other such secondary measures must, in the future, give greater consideration to redesign of the process equipment itself for purposes of hazard control.

There are endless numbers of examples of the creation of an unnecessary problem because of the failure of designers of process equipment to incorporate into their initial thinking questions of hazard and to accept from the outset a responsibility to minimize the poten-

tial hazard which is on a par with the responsibility they assume for the operation of the process itself.

DR. ZAPP: I would certainly agree with everything that Ted Hatch has said. I notice that this question really concerns three things: possibilities of changing process equipment, methods of manufacture, and use of toxic material.

I am sure that we could think of examples of all three. Ted has spoken of changing process equipment of one sort or the other. Then, the manufacturer may sometimes be able to substitute a less toxic material. As far as the hazard of use is concerned, I can think of some examples. I think it is almost a truism that we can control any toxic hazard if we are willing to go to the trouble to do it. Now, sometimes economics is a decisive factor there. That is, if you have to take extensive measures to control a hazard, it may not be economically feasible to do it.

MODERATOR AHEARN: Thank you, Dr. Zapp. Next question: "Can one distinguish between health impairment resulting from effects of handling toxic material and that resulting from fear (anxiety states) of effects from handling such materials?" Dr. McGee.

DR. McGEE: I think the answer is "yes" for certain materials and "no" for others. If a satisfactory differential diagnosis is to be made, there are two requirements. First, there must be some objective test which is specific for the effects of the material. By that I mean, by reliable chemical analysis. Second, there must be the ability to rule out a similar effect from anything else with which the worker may have come in contact inside or outside the plant. In other words, we must be able to say that a specific health impairment resulted from the material in question and under circumstances where we can rule out other possible factors producing that end result.

An example is the anticholinesterase effects of certain phosphorus-containing insecticides. You have an objective test, in most instances you have the opportunity to rule out other exposures which could alter significantly the level of cholinesterase in the blood:

There is another field, however, of materials whose effects are signs and symptoms which are rather vague. I feel the clinician cannot be sure whether such illness is a result of actual exposure to a material which is known to give such vague symptoms in the early stages. Butterflies in the stomach, problems of sleeping, malaise and the like are symptoms found frequently in the man who has an anxiety state. Sometimes the recognization that the exposure is insufficient to produce the diseased state gives us a reasonably good clue that an anxiety is responsible.

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I think all the physicians present here will recall in their experiences examples of epidemics of anxiety in groups of people because one or more workers felt that he had developed illness from a particular exposure. He talked about it and others soon felt they had the same symptoms. In some instances we have sufficient control of the environment to know exactly what were the possibilities of exposure and to say that it is impossible, under the amount of exposure for the episode to be a bona fide exposure with resulting illness. Therefore, the entire thing must be on a psychosomatic basis.

MODERATOR AHEARN: Now, we will go to another question: "How adequate are animal experiments as a means of predicting toxicity for human beings?"

DR. ZAPP: If we are trying to predict effects on the human being, then the human being himself would be the ideal experimental animal. We can't use man as an experimental animal, and, therefore, we must accept other species as an imperfect substitute.

Now, perhaps the soundest basis for predicting the effects on man from the effects on animals is that our internal anatomy and physiology are rather similar. If we are dealing with a chemical that produces liver damage in dogs and other animals, then we can be fairly sure that it will produce liver damage in man. We cannot be too sure about the quantitative relationship. There are differences in species of susceptibility.

Now, with all that, with the recognition that animal experimentation is an imperfect substitute, I think we can look with some satisfaction at results that we have obtained in predicting effects on man through animal experiments over the past 100 years. We have certainly learned a lot from the animals, and we have, with the use of perhaps arbitrary factors of safety, been guided by those results in setting up criteria for safe practices with respect to man.

By and large, we have been successful. There are exceptions. There are materials that affect man in ways that we cannot reproduce in any experimental animal, but they are, fortunately, rather rare.

MR. HATCH: I like the emphasis Dr. Zapp put on the quantitative aspects. For obvious reasons, it is not possible to translate the findings on animals for direct application to man.

How adequate are animal experiments? In some cases they are highly adequate and in some other cases they haven't been adequate. Certainly, none of us want to go away from here with the idea that the experimental animal can give us all the answers, but they have given us information of enormous value. So, there is no question that the animal plays an important part in the study of toxic agents.

MODERATOR AHEARN: We have arrived at the moment when we would welcome questions or statements from the floor. If anyone has a question to ask about any phase of the discussion of the panel, I would welcome his getting up and giving his name and asking his question or making his suggestion.

DR. ANNA M. BAETJER, Johns-Hopkins University: I know that the time is very limited, and we have not had time to cover all the questions. I would particularly like the panel to discuss two phases: one, the three questions that deal with the labeling laws and the importance of these; and two, how can the consumer determine the composition of toxic materials sold under trade names?

MODERATOR AHEARN: As a matter of fact, we had grouped those three together. Dr. McGee, will you take off on those questions?

DR. McGEE: How can consumers determine the composition of toxic materials sold under trade names? Sometimes it is almost impossible to do so, From the standpoint of a practicing physician treating acute poisoning, such information comes in too late for him to help his patient. His problem is that of taking a trade name and trying to find out what it means. He gets a chemical identity as the first step, and he still doesn't know what the material is in a pharmacologic sense. He has to have that material classified in a pharmacologic or toxicologic sense for the information to be of any help to him. If he doesn't know something of the biologic properties of the material, if he doesn't know the site of action, he will have no basis for intelligent therapy. Too frequently, in our present setup, that information comes to him a little late to be in the best interests of the patient. The labels are not big enough to contain all of this information which might be required by the physician. There are in some packages inserts of descriptive material which can be of use to him in some instances.

I think, frankly, we must improve techniques for getting the information that is required to the customer, and in turn, to his physician where there has been an accident and resulting illness. Poison control information centers may help.

MODERATOR AHEARN: Thank you very much. Dr. Bachman, you are a chemical engineer. I believe everybody would like to hear your specific answers to the question of whether a manufacturer of toxic materials can be compelled to follow labeling restrictions and cautions as recommended by the Manufacturing Chemists' Association. Also, we would like to have your comments on the current status of efforts by a number of organizations, such as the Manu-

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facturing Chemists' Association, to develop adequate labeling and to standardize labeling.

DR. BACHMAN: I don't believe the Manufacturing Chemists' Association has any authority. My answer to that is no, I don't believe manufacturers can be compelled to follow the recommendations of the Manufacturing Chemists' Association. On the other hand, I think it is highly desirable that they cooperate to the maximum degree possible, and I think the great majority of the manufacturers do attempt to do this because most of them are members of the Manufacturing Chemists' Association.

Now, as to the current status of these efforts, that is perhaps one of the most active committees in the Manufacturing Chemists' Association. In many cases, it has formulated codes and labels to be used, which I believe are being used.

Of course, I think the crux of the whole question here is for such organizations as the Manufacturing Chemists' Association, The American Medical Association, and the chemical specialty people to get together and try to formulate a coordinated policy on labeling. We are always going to have difficulties if you have several approaches to labeling. I think we must have a unified approach or, if it is broken down into compartments, these compartments must all originate from the same source. That is, they must originate from the same authority, be that authority one that results because people work together or one that is enforced by virtue of government action.

MODERATOR AHEARN: There are a number of associations, including the Manufacturing Chemists' Association, busy in this field. I believe the American Medical Association is equally active.

It seems to me, Dr. Zapp, I should ask you to devote yourself specifically to the question, "How can consumers determine the composition of toxic materials sold under trade names?"

DR. ZAPP: Before I answer that, Mr. Ahearn, I would like to make one comment on the current status of the work of these various associations. The Manufacturing Chemists' Association, through their Precautionary Committee, the Chemical Specialties Manufacturing Association, and the American Medical Association have agreed that they will work together towards wording of some uniform labeling law or at least a set of principles that will guide these various associations. The C.S.M.A. group is now meeting in Philadelphia on this very same subject. That is the current status as far as I know.

With respect to Question 21, I think that all three of the agencies I have just mentioned, the Manufacturing Chemists' Association,

C.S.M.A., and A.M.A. agree that there should be more information on product labels than there is at the present time. I believe with respect to the industrial uses of chemicals, that industry is fairly well satisfied with M.C.A.'s principles of labeling as expressed in its Manual of Warning Labels, with which I presume all of you are familiar. However, when it comes to the consumer, and particularly the user of small packages of cleaning powder or toothpaste or cement or what have you, it is agreed that there should be more information on the label so that the user will have some idea of the active ingredients and some idea of the hazards involved in an accidental exposure to material.

One of the most frequent inquiries I suppose that we get in the du Pont Company is, what happens if a child swallows a little du Pont cement? It was never intended for that purpose, of course, but the question is, what happens? Fortunately, the answer to that is, "practically nothing, don't worry about it"; but that's the thing that the person needs to be reassured about. The physicians, on the other hand, would like to see on the label the kind of information that would enable them to treat cases of accidental exposure. Now, with all the good will in the world on the part of these organizations, there are still many practical difficulties involved in formulating a set of labeling principles that will do the job to everyone's satisfaction.

The householder really wants to know how to keep out of trouble and avoid calling the M.D.'s. And so it goes.

Now, I think that something is going to be done, and out of all this activity there will be more product information on the labels. Meanwhile, we have the resources that Dr. McGee told us about, the poison control centers. There are one or two compilations that give us a good deal of information about the trade name products, and Dr. Hodge of the University of Rochester is coming out with an encyclopedia which will give more information of that type. But, ultimately, the manufacturer is the best source of information if you need it. In most of these cases where information is needed in a hurry, I think it can be best obtained by getting in touch with the manufacturer or his branch office.

MODERATOR AHEARN: Thank you, Dr. Zapp. Mr. Baile, I believe to complete the discussion, you ought to answer this question: "Are present labeling laws adequate with respect to requiring warning and preventive measures as to toxic qualities?"

MR. BAILE: I think there we first have to define the sense in which we are using the term adequate. If we use the word in the sense that compliance assures immunity from liability for the manu-

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facturer, our answer would be one thing; and on the other hand, if we mean by adequate in the sense of sufficient requirements and enforcement to protect the public from injury, I think there is a different answer.

From the first standpoint, labeling laws as such do not give immunity from liability to a manufacturer by mere compliance with the labeling law. The common law itself imposes a duty upon the manufacturer to bring to the attention of the users of his product and people who are in the vicinity of its use, the dangers which are inherent in its use or may flow from it. He must comply with that standard.

Considering it from the second standpoint—of the adequacy of the laws to protect the public from injury—I think we have to say that the laws as such are inadequate. I am also one of those who has the view that the laws will always be inadequate, because I think there is necessarily a lag between technology and its development, and the ability of legislators to act.

For that reason, I have always felt that effective labeling legislation should be broad and general in its terms and depend for effectiveness upon detailed and limited regulations issued pursuant to that broad general statute. I think when this is done, we are then able to more quickly adopt regulations to changing conditions and to more effectively enable industry to comply, because they can be more specific and thus more clearly understood.

As you know, the number of labeling statutes that exist today are bad. Even the person who confines his attention to that subject and nothing else, and there are few people who do, not only has three or four federal statutes with which he must deal, but there are some 28 separate state statutes, and then there is a multitude of local ordinances that have other effects upon us. They have many advantages from the standpoint of imposing criminal liability. In all instances, however, they are not effective in enabling authorities to take out of the market the products that do not meet the requirements of those statutes, and needless to say, the only way that you can really effectively prevent harm from substances that are improperly in the market is to exclude them from the market by confiscation.

Mr. Ahearn. I would say by way of summary that, yes, our labeling laws are inadequate. They need to be changed and I am hopeful they will be.

MR. WATERS: I think the audience would be interested in the question of whether industries should tell their employees that the material they are handling is toxic or carcinogenic.

MODERATOR AHEARN: I think we decided to group that question with the question, "Should information on the presence of toxic exposures in industry, obtained by health departments, be given to labor unions and employees or only to management?" Dr. McGee.

DR. McGEE: In answer to the first question, I have found no way to conduct a program which will get the cooperation of the employees without giving them the reasons for it. These people are entitled to it.

I think the only successful programs that I have observed elsewhere, outside of our organization, are those in which the employee has some knowledge of why he follows certain operating procedures regardless of what the end effect is of the material or the end effect might be in the materials that he handles. Therefore, I would say that we must give the employee that knowledge so that he can understand and use it in coming to a conclusion as to why he must do certain things to protect himself. I think the same statements apply to organized groups and safety committees and union leaders.

MODERATOR AHEARN: You draw no distinction as to information made available?

DR. McGEE: That's right.

FLOOR SPEAKER: It is required in Ohio to tell the employees of the toxic material in the department and it is required to repeat it to them monthly.

MODERATOR AHEARN: Thank you very much.

MANFRED BOWDITCH, Lead Industries Association: I think there were two important matters not covered in the discussion of labeling. First of all, Dr. McGee said that very frequently the nature of the toxic substances gets to the doctor too late. I wonder if he is aware of the fact that the American Academy of Pediatrics has now established over 30 poison control centers from coast to coast. There are 15 in the State of Florida alone. All of them are manned by telephone 24 hours a day. All are in charge of a physician, and at a meeting only day before yesterday it was agreed that the Public Health Service will be asked to take over the national direction of these centers and see that current information is supplied to all of them. I really think that this is of importance. With regard to the matter of warning labels, there is a body of laws known as the Pharmacy Laws, which were designed to protect the public in purchases over drug store counters. In a court in one of the southern states recently, one of these laws was interpreted to cover a shipment of litharge in industry and an award of $18,000 was made on that

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basis, and at the present time I understand that further suits amounting to $80,000 are before the courts. I am told that only about half a dozen of the states have adequate exemptions to prevent such misinterpretations. Only about three weeks ago I discussed this with representatives of the Manufacturing Chemists' Association, and it is my understanding that they will take steps to try to bring proper exemptions into the laws of the other states.

MR. T. J. LANIGAN, General Electric Company: I would like to hear discussion on the question: "How is it best possible to maintain a continuing safety awareness among employees engaged in hazardous occupations involving the use of toxic materials?"

MR. HATCH: To have an effective safety program the people who are attempting to do this must maintain among themselves an awareness of safety needs that is stronger than the safety awareness of the employees. I have no particular procedure to suggest since I have had no special experience in developing and maintaining such awareness. I do know from experience, however, that there is great risk if such awareness is not maintained and developed on the part of everybody concerned. We have all seen good programs break down because of lack of maintenance of awareness.

MODERATOR AHEARN: Dr. Zapp, would you comment?

DR. ZAPP: I will only add to what Ted Hatch has said. I think the promotion of the continual awareness of the safety program among employees is a responsibility of supervision. Supervisors will only do it if they know that higher management wants them to do it. Now, when safety policy is set at the top level of company management and is passed on down through the various supervisory channels to the employees, then I believe the program can be maintained adequately, and the employees will have a continuing awareness of the program. If the foreman goes around an area without wearing a mask where a mask is required or without wearing safety glasses in an area where safety glasses are required, obviously, by his example, he is going to undermine the whole program. If, on the other hand, he goes in with a mask on or goes in with safety glasses on and insists that others do likewise, he has a good chance of enforcing the rules and maintaining the continued awareness that this question speaks of.

MODERATOR AHEARN: Thank you. Mr. Baile, you are the general counsel of an insurance company. It seems to me you are the panelist to answer these two questions: "What methods are available to insurance carriers to assist their insureds in the protection of employees and the purchasing public from the hazards of toxic ma-

terials?" and, "What methods are available to insurance carriers to assist small industries in the detection and control of hazardous conditions?"

MR. BAILE: I think those questions are primarily directed to the insurance carriers' place in contributing towards the reduction of accidents in industry, either among the employees or in users of the product or in third parties who might be otherwise affected by the activity of the employees of an industry. I think that it can probably come under eight points:

First is the function that Dr. Zapp has already mentioned, that is, through the sale of the insurance there is brought to the attention of top management the importance of the safety program. It has a very direct influence on the amount of costs, a very substantial item in the cost of any industry. By bringing that to bear on the top management, you get the influence which Dr. Zapp suggested, which is so necessary, of that philosophy going down through the various echelons of the company.

Also, I think it is that very force that brought about the changes in the philosophy of industry that we referred to earlier. I think the safety awareness of industry has been, to a great extent, brought about by the influence of the salesmanship, if you will, of the insurance industry. But in a more practical sense, the insurance industry contributes through its engineering facilities and its suggestions and participation in the development of safety programs in any industry. This consists of arranging and conducting safety meetings, distributing the proper type of literature, and the proper type of postings. Secondly, by its own engineering, it supplements the safety program of a company in ascertaining where the hazards in that industry exists. And in doing so, it approaches it, I think, with a greater objectivity, because it is uninfluenced by those unconscious influences which company people are subject to, such as the costs of changing a process, the reduction in time, or the increase in time which some change of process to incorporate a safety factor would involve.

Another way in which they can contribute is in the preparation of a catastrophe plan for specific hazards. Insurance carriers can aid in the development of drills so that companies are prepared in the event those catastrophes occur.

Another manner in which they aid is in the supplying of information for the preparation and distribution of safety material. The insurance industry acquires the collective knowledge of many industries and can bring that knowledge to the aid of a particular company.

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agent manuals, which is a method of coordinating the receipt of toxic materials into a plant, so that knowledge comes to the attention of the production personnel of the nature of the product that is being brought in, in order that proper safety precautions can be taken.

Finally, I think the contribution that the insurance carrier can make is to maintain the awareness of safety. I think the great difficulty that occurs in many industries is that you develop a program to avoid accidents and prevent accidents. It has a peak, and then it tends to slacken off. Every once in awhile it needs to be rejuvenated. I think the fact that the engineers of the insurance carrier and its staff come in regularly and constantly bring safety to the attention of the people at the production level helps establish the habit of safety and it is that habit which in the long run will prevent many accidents.

MODERATOR AHEARN: On that same point, will you elaborate on methods available to insurance carriers to assist small industries?

MR. BAILE: I might say this: I think there is a distinction that should be drawn there. In some industries, because of their size, they are able to employ the technical talent which is required in effecting a sound safety program; whereas in other industries, because of the small number of employees they are not able to have people who will specialize in those particular problems. In that instance, the insurance carriers become another arm of the company and supply it with technical talent which it doesn't have available within its own personnel.

MR. OVIATT: Mr. Baile, isn't it true that the insurance companies look to the larger manufacturers many times to get information on these toxic materials, on the processes that are used and the safety devices that may be necessary?

MR. BAILE: Very much so.

MR. OVIATT: And then they can impart that knowledge to the smaller companies that are not in a position to hire these highly trained experts?

MR. BAILE: I would say that is definitely true.

MR. OVIATT: There is also another way—I think you will bear me out on this—that insurance companies have been helpful. That is in making counts—fume counts, petrographic analyses, and so forth. They go into the plants to make these and make their recommendations.

MR. BAILE: Yes, that is right.

MR. OVIATT: I would like to add just one word if I may to the earlier question on efforts to develop adequate labeling and to standardize labeling. Those on the panel who spoke to that question failed, I think, to mention the fact that the Manufacturing Chemists' Association at present has a law, a proposed federal law for labeling and for the far more important matter of confiscation. You can have criminal statutes all over the place, but throwing a man in jail or fining him $10,000 will not save the life of someone using a chemical that is not properly labeled. I think this confiscation feature is all-important. This new law that M.C.A. proposes does take care of that adequately as to the defining of what a poison is and setting forth tests for determining a poison.

Now, what will become of that law, no one knows. That is the present status of the M.C.A.'s efforts.

MODERATOR AHEARN: Thank you.

DR. BACHMAN: I would like to comment in reference to earlier questions. To maintain safety awareness you must say that a company has to tell its employees what the nature of the materials is which they are handling, whether they are toxic or carcinogenic, because you can never have a safety program unless you give the people working with toxic or carcinogenic materials such information. I don't think that was adequately emphasized before.

I think as far as the question of the most economical and best way a small plant can get help on problems of toxicity and industrial hygiene, the obvious answer is a good consultant. I don't know if there is enough consulting work done in a continuous manner with the different smaller companies.

DR. THOMAS L. SHIPMAN, Los Alamos Scientific Laboratory: I would like to have this question discussed: "If a manufacturer conforms to the highest standards of an industry in the manufacture of his product, will that be a complete defense in an action against him for injuries resulting from his product?" In placing this question before the panel, I would like to remind them of the experience of some of the electrical product manufacturers and their difficulties with beryllium.

MODERATOR AHEARN: Mr. Oviatt, let me ask you to answer that question.

MR. OVIATT: I think that can be categorically answered as "no." There have been cases where a court has held that even though the standards of the industry have been followed, the highest standards, that under the circumstances those standards weren't high

enough. Each individual manufacturer must assess his own product and go beyond, under certain circumstances, the standards set by the industry. That is so even though labeling laws are followed.

MODERATOR AHEARN: Mr. Baile, would you care to add something to that answer?

MR. BAILE: By way of addition: The responsibility of the manufacturer is essentially one to conform with the standard of care that the law imposes. Now, that standard may be imposed either by statute, by judicial decision or by what is probably a pretty vague standard, namely, the standard of care of a reasonable man acting under those circumstances.

Now, in determining whether that third standard has been met, a court or jury should take into consideration what the practices and standards of an industry are, but they are only a measure for the fact-finder to use and are not binding upon them. In other words, the widespread adoption of a particular method or practice will be a test for determining whether or not reasonable care was used. But the courts have said that 12 lay people, who don't know a thing about the business, can say you could have used more care. I can't believe that reasonable care can be any more than an industry would use, because I don't think industry would ever adopt, as a widespread practice, a careless practice if there were a safe one. The court seems to think that 12 jurors can say they can.

I might say, whenever I have been confronted with that problem, I have always remembered the one judge who said the only reasonable man he ever knew was his wife's first husband.

MR. SCHWENZFEIR, JR., Brush Beryllium Company: I would like to have the expression of the panel on the distinction in labeling procedure between what is required for a retail product and what is required for industrial products. It has been inferred that it is not particularly important to exercise greater care in labeling if the product is to be handled in commercial use, though it may be in retail.

It is implied in another question that the manufacturer of the toxic material can pass the responsibility on to the corporate purchaser, who, in turn, passes the hazard on to his employer. I wonder if that is really correct.

MR. BAILE: If I understand your question, it is this: Whether a manufacturer has a duty with respect to giving warnings as to the attributes of the product to the ultimate consumers where he sells, let's say, to a middle purchaser who repackages it—or something like that?

MR. SCHWENZFEIR, JR.: No, intermittent handler is another production concern, like this bulk packaging that was in one of the earlier questions of the program.

MR. BAILE: Your question, then, concerns the liability of the manufacturer who distributes in bulk to people who handle that product in transportation and who are employees of the purchaser who use it in some manufacturing process?

MR. SCHWENZFEIR, JR.: Right.

MR. BAILE: I would say by way of answering that, first of all, I.C.C. regulations, of course, control to a large degree the requirements of labeling in transportation. Now, they are designed primarily for the protection of employees who are handling it in transportation, and, of course, conformance with that is required and if there is a lack of conformance and injury results to employees of carriers who are transporting it, liability would be imposed.

From the standpoint of the employees of the purchaser of the product, the problem there, as I see it, is this: The law imposes upon the manufacturer the obligation to give warning, reasonably calculated to call to the attention of the users or potential users of the product the hazards that are apparent in that product.

Now, notice, it is a duty of reasonableness that is imposed upon them. It would be an utter impossibility for the manufacturer of carbon tetrachloride, let's say, to go to every employee in every manufacturing plant that uses that and inform them as to the hazards that are involved in the use of it. So, the law recognizes, under those circumstances, that if the manufacturer brings to the attention of the purchaser whose employees are going to use it, the hazards of that product, or if the purchaser without having it brought to his attention is aware of the hazards of that product, then there is no obligation on the part of the manufacturer to inform them, because the law never requires a man to do a vain act. You don't have to tell somebody the dangers in a product when he already knows them. Then the law imposes upon that employer the duty of providing his employees with a safe place to work and of passing on knowledge of hazards to the employees so the employee can take such action and exercise such care as is necessary for his own protection.

Does that answer the question or am I still missing it.

MR. SCHWENZFEIR, JR.: That's it. Thank you.

MODERATOR AHEARN: Now, is there another question from the floor?

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MR. W. W. HODGE, Koppers Company, Inc.: I would like to hear discussion on the question of how industry can best work with governmental groups in order to be certain that regulations for the control of hazardous materials are proper and reasonable.

MODERATOR AHEARN: Mr. Hatch, we had assigned you to answer that question.

MR. HATCH: I am not certain what the framer of this question had in mind—obviously, there are many different answers to it.

Industry, presumably, does have a large volume of information that can be best utilized by working with governmental agencies in order that the proper regulations be formulated. I have in mind one very specific way in which industry is working with an official agency to make sure of proper regulations, and that is in the State of New York, where under the procedures for developing or regulating codes for industry, it is required that an advisory committee be formulated, including representatives from the industries directly involved, those who supply equipment to be used in industry, representatives from labor unions, and so on.

Now, I think the important point here is this: in the very framing of this procedure, recognition is given to the fact that the problem pertaining to the use of a particular toxic substance in one particular industry may be different from the problem that arises in the use of that same toxic substance in some other industry, and that to be reasonable regulations must recognize this. Regulations developed from this point of view are distinguished, for example, from a general regulation which consists principally of a list of permissible concentrations. Take carbon monoxide, for example: adequate regulations for control of this hazardous gas should be different from regulations governing its control in steel mills.

This is recognized in the New York procedure, and provisions are made for the active participation in formulation of industry codes by those people from the industries who do have needed information and experience. Obviously, to be objective, it must be agreed by all those who do participate that the purpose is to come out with a regulation which will, in fact, prevent ill health or accidents.

We had in this room not long ago a public meeting which had the same purpose here in Pennsylvania. Prior to the official adoption of regulations pertaining to a certain industrial hazard, people from the industries who could bring important information and experience to bear on the problem were invited to attend and contribute suggestions which would make the final code more effective. I believe that the industries that do have this information should welcome and, indeed,

should search for opportunities to bring this information to the official agencies and work with them in translating it into reasonable regulations.

MODERATOR AHEARN: Now, we have room for about one more question. Who has a question to ask?

R. C. ERICKSON, Aluminum Company of America: How would you propose to bridge the gap between safety and the business revealing trade secrets when such became necessary in the interest of safety?

DR. BACHMAN: Of course, the question of trade secrets is rather an interesting question. If you have rather a fundamental patent on a process, you usually are adequately protected.

Let's try to confine ourselves to the area where we say the patent protection is not available. I think this is going to be a tough one. Frankly, I think about the only way that it could be handled would be—well, there are two ways. If the number of companies involved were small, I think it likely that Company A possessing the trade secret might be quite willing to make the information available to Company B with the sole restriction that this information not be used by Company B except insofar as it was used for the purposes of protecting the health of the employees or for rendering the work safely. If the secret information or the confidential information, let us say, were to be used for purposes of profit in the manufacture of the item, there Company A would properly expect a remuneration from Company B. This is fairly standard without the element of safety.

There are a lot of companies today that go out and deliberately buy confidential information rather than patent information. When you go beyond the relationship existing between the few companies and try and say that this is something that would be broadly applicable to a great number of companies, I don't know how you could do that except through some form of perhaps very fine social feeling, let us say, social consciousness on the part of the company possessing those trade secrets and indicating a willingness to make available to their fellow countrymen at large such information. I think that is the only other possible approach whereby you can achieve that.

So, I think you have two cases; one, where the number of companies involved are limited, this can be handled. Where the companies involved are not limited and very large, then you must depend, I believe, entirely upon the social consciousness of the management of the company holding the trade secret.

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MODERATOR AHEARN: You would never think it wise to undertake concealment if the price of concealment was to bring difficulties to a man's health?

DR. BACHMAN: Of course, I am a little bit biased. I don't believe people are such blackguards that they would do those things.

MODERATOR AHEARN: Gentlemen. I think I anticipate the wishes of the audience when I express to Dr. McGee, Dr. Bachman, Mr. Baile, Mr. Oviatt, Dr. Zapp, and Mr. Hatch, your appreciation of the contribution which they have made to our knowledge. We have had a distinguished panel, and I hope and believe that we have had a very profitable session.

I would like to say on behalf of the panel, you have been a good audience. You have been very attentive and very courteous, and that has inspired the panel to do a good job. You have to have a good audience to have a good panel. We have had both here today.

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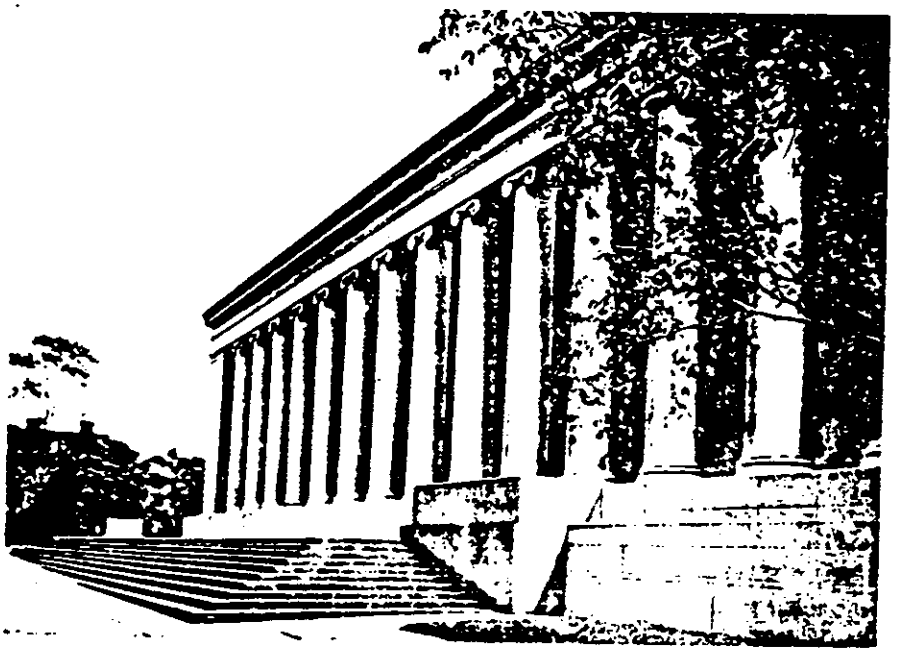
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November, 1956



21st
ANNUAL MEETING
INDUSTRIAL HYGIENE FOUNDATION

Transactions Bulletin No. 30

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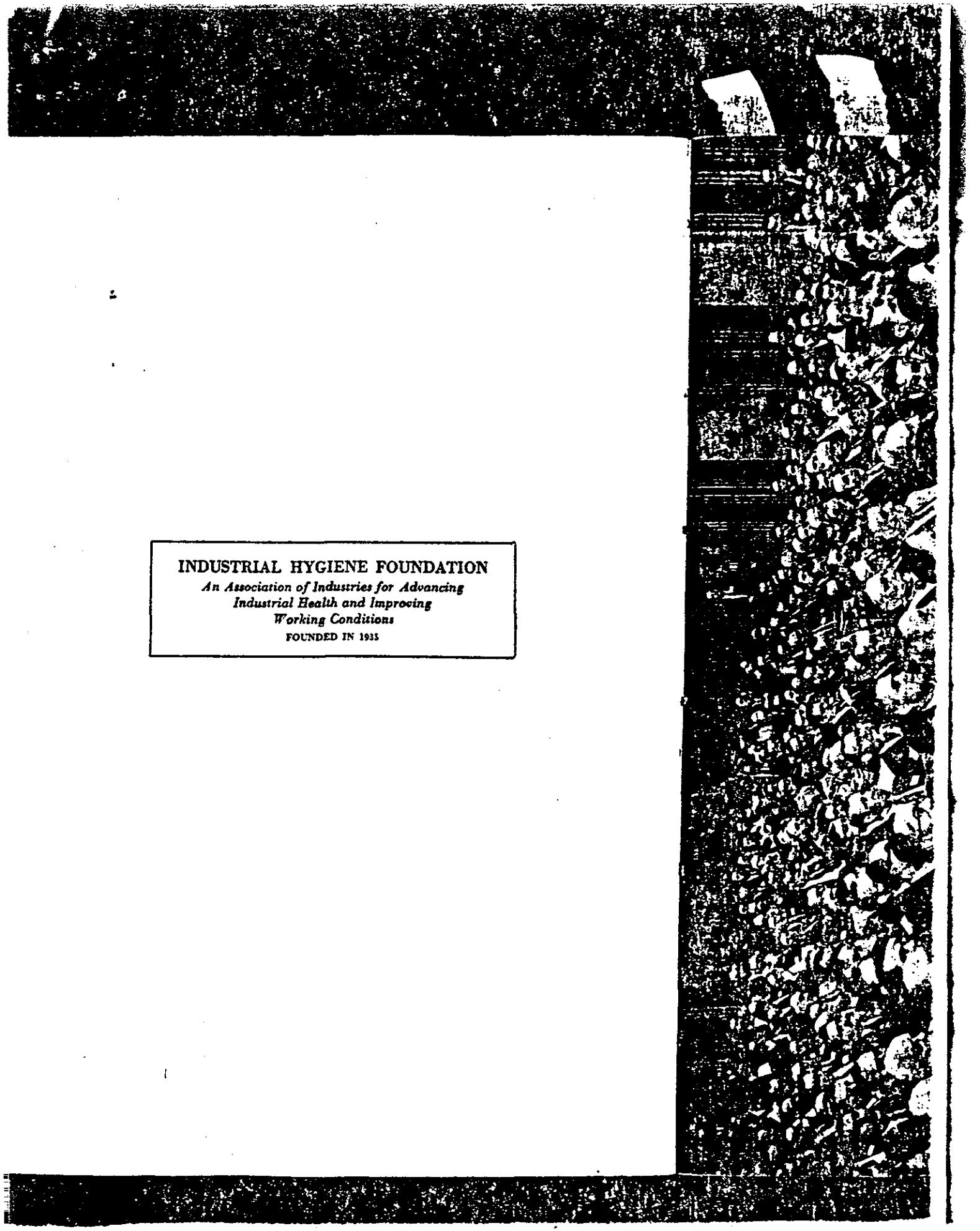
INDUSTRIAL HYGIENE FOUNDATION OF AMERICA

HELD AT

MELLON INSTITUTE
PITTSBURGH, PA.

NOVEMBER 14 AND 15, 1956

MANAGEMENT, MEDICAL, LEGAL,
CHEMICAL-TOXICOLOGICAL,
ENGINEERING, AND JOINT TECHNICAL
CONFERENCES



INDUSTRIAL HYGIENE FOUNDATION

An Association of Industries for Advancing Industrial Health and Improving Working Conditions

FOUNDED IN 1935



Capacity attendance filled the Mellon Institute Auditorium at both the Management and Joint Technical Conferences.

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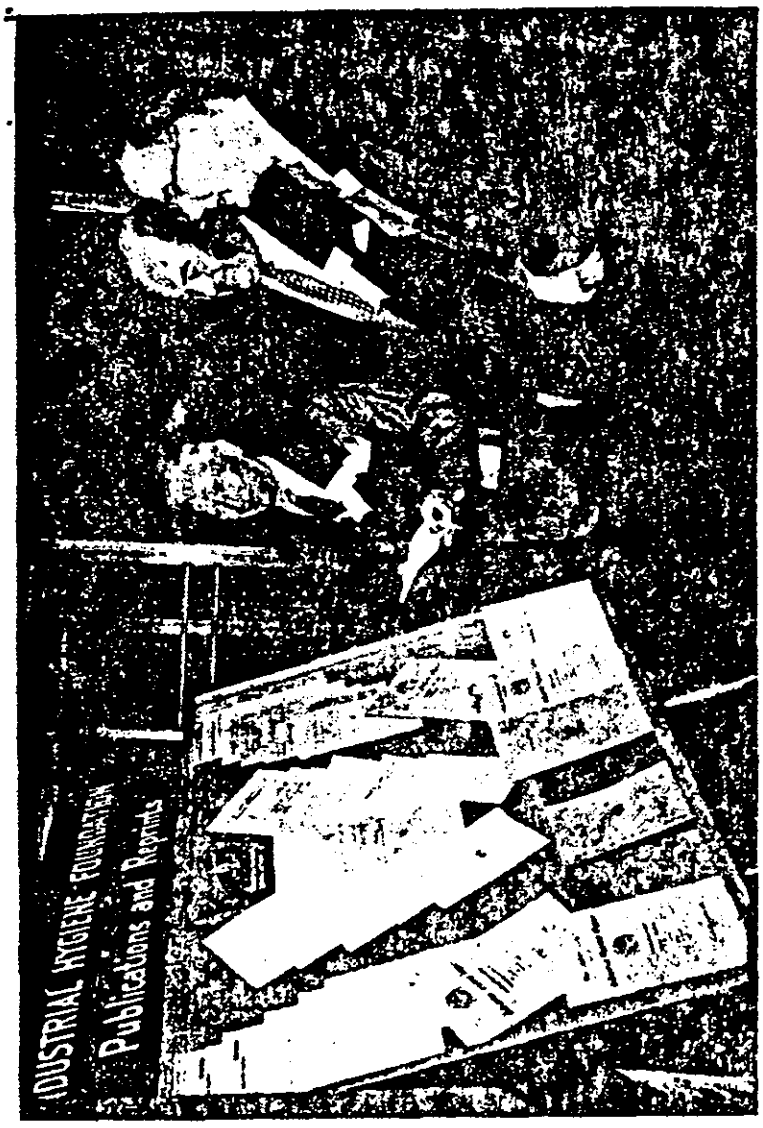
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and error does have its advantages, at least if there is not too much error. Without gradual improvements pressures are built up. Extreme remedies may then be suggested. These may well seem satisfactory to only a few. Let us have evolution rather than drastic change.

SUMMARY OF OCCUPATIONAL DISEASE LEGISLATION—1956

Congress S.2280 (Public Law 803—84th Congress) effective July 26, 1956, increases benefits under Longshoremen's and Harborworker's Compensation Act—revises provisions as to special fund.

Kentucky .....S.B. 98 (Chapter 342, Laws of 1956) effective August 1, 1956, revises occupational disease provisions.

Maryland .....S.B. 85 (Chapter 94, Laws of 1956) effective June 1, 1956, lengthens statute of limitations in case medical care is furnished.

Massachusetts ..H.B. 3140 (Act No. 602, Laws of 1956) effective November 4, 1956, revises rehabilitation provisions.

New York .....S. Int 1588 (Chapter 696, Laws of 1956) effective March 1, 1957, enacts volunteer firemen's benefit law.
Int. 3874 (Chapter 697, Laws of 1956) effective May 1, 1956, enacts amendments to volunteer firemen's benefit law.

Pennsylvania ...H B. 1397 (Act 355, Acts of 1955) effective March 29, 1956, revises Occupational Diseases Act.
S.B. 235 (Act 488, Acts of 1955) effective September 1, 1956. Amends Occupational Disease Act with reference to coverage of tuberculosis.

Workmen's Compensation Study Commissions

Massachusetts ..H.B. 2923
Maryland .....(appointed by Governor)
Michigan .....S. Res. 43
New York .....(Moreland Commission)
Virginia .....H.J.R. 91 (Public Officers)

Atomic Energy Study Commissions

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Industrial Air Cleaning was the theme of the Engineering Conference. Program participants were, left to right: Robert T. Pring, Technical Director, Dust and Fume Control Division, Wheelabrator Corporation; Dr. Leslie Silverman and Dr. Philip Drinker, Harvard University School of Public Health; Arthur C. Stern, Robert A. Taft Sanitary Engineering Center, U.S. Public Health Service; William B. Harris, Health and Safety Laboratory, U.S. Atomic Energy Commission; and John M. Kane, Manager, Dust Control Products, American Air Filter Company.

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JOINT TECHNICAL CONFERENCE

Chairman and Moderator: V. P. AHEARN
Executive Secretary,
National Industrial Sand Association

Answering questions on health problems involved in the manufacture, sale and use of toxic materials at Joint Technical Conference were leading authorities on various aspects. Panel participants are, left to right: Dr. L. C. McGee, Medical Director, Hercules Powder Company; Dr. P. W. Bachman, Vice President and Director of Research and Development, Koppers Company, Inc.; H. S. Balle, Deputy General Manager and General Counsel of General Accident, Fire and Life Assurance Corporation, Ltd.; C. R. Oviatt, Legal Department, Union Carbide and Carbon Corporation; Dr. John A. Zapp, Jr., Director, Haskell Laboratory for Toxicology and Industrial Medicine, E. I. du pont de Nemours & Company, Inc.; Theodore Hatch, University of Pittsburgh Graduate School of Public Health, and Research Adviser to the Foundation; and V. P. Ahearn, Executive Secretary, National Industrial Sand Association.

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HEALTH PROBLEMS INVOLVED IN THE MANUFACTURE, SALE, AND USE OF TOXIC MATERIALS

A Panel Discussion

MODERATOR:

V. P. AHEARN
Executive Secretary,
National Industrial Sand Association

PARTICIPANTS:

P. W. BACHMAN, Ph.D.
Vice President & Director of Research & Development,
Koppers Company, Inc.

H. S. BAILE
Deputy General Manager and General Counsel,
General Accident, Fire and Life Assurance Corporation, Ltd.

THEODORE HATCH
University of Pittsburgh Graduate School of Public Health; and
Research Adviser, Industrial Hygiene Foundation

L. C. McGEE, M.D.
Medical Director,
Hercules Powder Company

C. R. OVIATT
Legal Department,
Union Carbide and Carbon Corporation

JOHN A. ZAPP, JR., Ph.D.
Director, Haskell Laboratory for Toxicology and Industrial Medicine,
E. I. du Pont de Nemours & Company, Inc.

MODERATOR V. P. AHEARN: I would like to tell you something about the procedures for the operation of this panel. A list of questions has been prepared on the subject before us today, and copies will be distributed to the audience. Two members of the panel in most cases have been asked to be prepared to be called upon. That doesn't mean that other panel members are not supposed to participate. I want to make it clear that panel recognition is not necessary by the Moderator for contributions by members of the panel whose names do not appear at the left-hand side of the question. Each participant is supposed to add to the contributions made by the other members of the panel whenever in his judgment there are additional

... Accident, Fire and Life Assurance Corporation, ... Corporation; Dr. John A. Zapp, Jr., Director, Haskell Laboratory for Toxicology and Industrial Medicine, du pont de Nemours & Company, Inc.; Theodore Hatch, University of Pittsburgh Graduate School of Public Health, and Research Adviser to the Foundation; and V. P. Ahearn, Executive Secretary, National Industrial Sand Association.

contributions to be made. The panel participants met this morning to look over the questions and to discuss the program.

After the recess, at 3:30, we propose to give priority to questions asked from the floor rather than to the written-out questions. We hope that there will be floor discussion even if we haven't answered all the written questions, because we want to establish the town hall atmosphere and to give each of you an opportunity to ask a question, to make a contribution, to challenge a member of the panel, or do anything else that your democratic instinct suggests you do.

The first question which I am going to ask the panel is: "How does one define 'health problems'? What is meant by 'toxic material'?" I am going to ask Dr. McGee to answer that question.

DR. McGEE: In a broad sense, one might say that any deviation from optimum physical, mental, and social well-being is a health problem. That definition of health as the optimum state of mental, physical and social adjustment has been batted about for a number of years. I believe for the purpose of this afternoon's contribution, however, the health problems involved should be limited to those deviations from optimum health which occur as a result of an exposure in manufacturing, sale and use of something which is called "toxic material."

As the title is stated, of course, any deviation in health of a worker would react on his work in output, and so forth, in a broad sense. But I believe the meaning here is in a more limited sense of those deviations from the optimum physical, mental, and social adjustments which result from the contact with this thing called "toxic material."

Passing then to the second part of the question, "What is toxic material?" we are in trouble immediately. I find very few people, outside of those who are concerned with deleterious substances as they affect man, who have a concept of the large range in degree and character of toxicity. It is a word which means what anybody wants it to mean.

Unfortunately, to substitute for "toxic," "poisonous," "deleterious" or what have you, gets us no place. It so happens that everything with which man is in contact can be troublesome and "toxic" if he gets too much. Those things that we consider essential to life, including food, vitamins, minerals, and water, can be "toxic" to man. I believe Dr. Henry Smyth, Jr., defined "toxic" simply as a matter of too much. If we keep that in mind, we will realize then that we cannot circumscribe a certain group of materials and say these are toxic, others are not toxic. I must admit, and possibly Dr. Zapp can

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DR. ZAPP: I can only express my agreement with the remarks that Dr. McGee has made. The term "toxic material" is subject to very many interpretations by different people. The great difficulty that we have in talking about them and in drawing up laws and procedures to govern the use of toxic material revolves about the definition of toxic material.

Dr. McGee was quoting to you just a few moments ago from the report of the Council of Toxicology of The American Medical Association, in which are reviewed the various definitions of poison. (The Council found that there was no uniformity.) As a matter of fact, it states that there is no uniformity of legal or scientific opinion as to what constitutes a poison.

And then, since a precise definition that would fit all circumstances is not possible, the Committee felt that any substance that when improperly used may produce harm by chemical action, should be provided with an appropriate cautionary label or statement, et cetera. So, here, we have not only difficulty in defining what we mean by toxic material, but also a concern on the part of this group forwarning of the consequences of misuse. I think what we really mean to talk about this afternoon is more properly defined as hazards, that is, the probability that an injury will occur in the manufacture, sale, or use of these materials.

MODERATOR AHEARN: Thank you very much, Dr. Zapp. Now, I move on to the second question, unless at this stage a member of the panel wishes to add something to what these two gentlemen have already said.

You football men will notice I am playing a seven-man lineup on this platform. I am going to ask my right tackle, Dr. Bachman, this question: "Do you think there is any basic difference in safety as applied to people in research and development in comparison with people involved in regular production operations?"

DR. BACHMAN: I think this question in the first place refers to an approach to safety. In that respect, I will try to pass an opinion.

I think there is a considerable difference in the safety that one encounters in the laboratory and that which one encounters in the plant. In a plant in the regular production operation, it is possible for the engineers to break a process down into many component parts and study these parts from the point of view of safety; the different operations can be adequately safeguarded. I think there is not very

much difficulty in this, and it is rather rarely that we have accidents of any significant nature in processes that are continually operating in a repetitive manner. I think that is rather easy to control, and it is more feasible to train the operators in safety measures.

Now, in contrast with that is a research laboratory. The men in the laboratory are frequently working in unexplored and unknown areas. They may or may not, and probably will not, know the toxicological or hazardous explosive properties of the materials with which they are working or of the materials which might be formed as a result of their researches. So, here, you have only a few of the general rules of safety that apply. I think a great deal of it in the case of the research man depends entirely upon him. I think his approach to it must be one of safety consciousness. I think he has to really live safely and to be effective this has to be a part of his background, a part of his disposition.

MODERATOR AHEARN: Thank you, Dr. Bachman. Now, Mr. Hatch.

MR. HATCH: I certainly agree with everything he said except the second point, attitude. Certainly, it is true that the people who are doing the basic research and development work should incorporate into their day-to-day thinking the needs with respect to safety to a greater degree than people out on the production line. However, it has been my experience, and I am sure many of the rest of us here have had the same experience, that very often we find it just the other way around. The man who is doing research is so wrapped up in his research objective that he is inclined not to give very much consideration to these other matters.

I can recall visiting laboratories where, for example, they were using such a well-known agent as benzol and were slopping it around like water. At the same time, they might be quite concerned over the toxicity of the new and exciting material that they are developing. So, I am sure it is important to make sure that in the course of research and development, these questions are constantly raised, but I don't think we can rightly assume that the research people are always going to raise them.

MODERATOR AHEARN: Thank you, Ted. I want to remind the panel that other contributions are always welcomed.

MR. BAILE: May I interject one comment? The very distinction that both gentlemen have made between the research operation and production operation suggests the desirability of a slightly different approach to the safety program with respect to operation. In

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the production operation, you are dealing with guarding against the individual, isolated accidents in the course of production, whereas, in the research operation, you are concerned with the catastrophe problem. Therefore, your program in that respect should be designed to provide for the type of action required in the event those catastrophes occur.

MODERATOR AHEARN. Thank you very much, Mr. Baile. The next question gives us a chance to break out our legal talent up here. "Does not the obligation of the insured under a Products Liability Policy, particularly his agreement not to settle with a claimant nor to admit liability, interfere with a manufacturer's relations with his customers and with the public?"

Mr. Baile, you can be the first one to answer that question.

MR. BAILE: I believe the simple answer to the question is that it should not. I think at the same time you have to recognize that there is an apprehension on the part of some people that it does. In order that it shall not interfere with customer and public relations, I think it is of utmost importance that there be understanding on the part of both the insurer and the insured, and also that there be the utmost cooperation between the two.

The basic understanding that has to exist is to recognize the distinction between customer complaints on one hand and claims on the other. Customer complaints must be a concern of the insured, the manufacturer himself. He must be free to deal with customer complaints as you deal in business relations, without necessarily being concerned with the legal basis of the claim or the legal possibilities that might arise out of your action.

On the other hand, it is most important on the part of the insurer to recognize that the insured must be free to act in that way; that he must be free to deal with a customer in order that he will have a satisfied customer. Since that is the interest of the manufacturer, he can't restrain that action in order to protect his legal position. The interest of the insurer and the insured must be recognized as an identical interest. They are not two parties; they are one party serving one aspect of the insured's business, which is his relation to the customers insofar as they are affected by his products.

I hope I don't sound idealistic speaking as an insurance man on that subject, because I think it is the actual practice of every company of standing to operate in the handling of products liability claims in precisely that way. If it is done that way, then there is no interference with the company's relations with the public, the customers.

MODERATOR AHEARN: Thank you. Dr. Zapp, will you comment?

DR. ZAPP: Well, I can't speak on this topic as a lawyer or as an insurance man.

It does seem to me that there are two separate concepts involved in this question. One concerns the mechanism of settling claims which presume that there has been an injury for which the plaintiff seeks to recover damages. The other part concerns the relations of the manufacturer with his customers and with the public.

Now, it seems to me that the manufacturer has a very definite responsibility to his customers and to the public, and that is to point out to them how his product can be used with safety. Nothing can interfere with that responsibility on the part of the manufacturer. If, however, a claim arises which suggests either that the manufacturer's statements were inadequate or in error, then you have this question of deciding about liability, which I feel is a separate matter.

MODERATOR AHEARN: Thank you, Dr. Zapp. The next question is, "What information respecting physical and chemical properties and toxicological properties of the material does the industrial hygienist need in order to develop the hazard control program?" Mr. Hatch.

MR. HATCH: The answer to this question is very easy. You get all that is available. There is one very important aspect of this question as to what information concerning physical and chemical and toxicological properties that the industrial hygienist needs. The implication is that there is information with respect to the toxicological properties of the substance obviously essential to an understanding of the hazard. That doesn't tell the whole story, however. There must be added to this question; what information does he need also with respect to the way in which the process operates in which this toxic substance is to be used? It is important for us to keep in mind that there is a very real difference in toxicity and hazard. Here is where the physical and chemical properties as well as the toxicological properties come in.

We know, for example, that two substances may be equally toxic but quite different in respect to hazard. Thus, it should be the industrial hygienist's responsibility to accumulate all the information that is available, and it should be his responsibility to digest this information and determine to what extent more information is needed, because he can't limit his responsibility by simply saying that only so much is known about the substance and, therefore, decisions have to

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MODERATOR AHEARN: Dr. McGee.

DR. McGEE: Accepting the suggestions that Ted Hatch has given, I wonder if he would admit there is a practical shortcut which is useful in human exposures to some materials. I refer to the fact that if you have an explosive hazard at a concentration in air well below that causing a definite, clear-cut, biological effect, it is a simple and good operating rule to take the lowest concentration needed as a guide. You may disregard certain properties which are evident only at levels above that level which can be tolerated for reasons of safety.

MODERATOR AHEARN: Thank you very much, Dr. McGee. There are two questions on the list which bear essentially on the same points and we will therefore discuss them jointly. They are:

1. "What is the liability of a manufacturer of a toxic chemical who sells it in bulk for packaging and resale by the purchaser under his own name or brand in the event of an injury to an ultimate consumer?" and,

2. "What liability does a company have for its product if an adequate warning label is placed on the container but the ultimate consumer either does not read the warning label or does not follow its instructions?"

I am going to call on Mr. Oviatt first.

MR. OVIATT: If the manufacturer adequately warns a reseller of the toxic nature of the material either on the label or otherwise and of the care that should be used in handling it, he is not liable if the reseller fails to put such warning on the package when he repackages it and sells it to the public. Of course, if a manufacturer should find out in any one of numerous ways that the reseller is failing to put the notice or the warning or any material part thereof on the packages, then he should call the reseller's attention to it. If the reseller persists in disregarding those warnings, then I believe that he should stop selling it to him for his own safety.

Of course, what should go on a label depends greatly on the class of trade to which any product is sold, the knowledge of the people who are going to use it, the chemical knowledge and results that might come from mishandling. So, you can't say a label has to bear thus and so for the entire general public. And that would also control to a certain extent, what should go on a label to a reseller. It is what knowledge he may have of the chemicals sold and what he should advise his purchasers as to the method of use.

MODERATOR AHEARN: Thank you very much, Mr. Oviatt. Mr. Baile.

MR. BAILE: I think in answering the first of the two questions, you have to make a distinction between chemicals which are toxic as a normal attribute of the chemical itself on the one hand, and on the other hand the chemical which is toxic as a result of some danger-creating defect that exists in the chemical which would normally be harmless.

Now, I think Mr. Oviatt's answer is primarily directed to the first class where you are dealing with the chemical which is naturally toxic. Under those circumstances, when the purchaser is given full knowledge of the toxic character of it and the dangers that are inherent, or the purchaser, without your telling him, has that knowledge, I don't think there is any liability on the part of the manufacturer.

However, where the toxic character of the chemical is created by some defect in the manufacturing process, then I think there is liability on the part of the manufacturer.

I don't think we are going to permit manufacturers to insulate their own carelessness in the manufacture of their product against consumers by the intervention of a middle man.

MR. OVIATT: Mr. Baile, after all, the question was what is the liability of the manufacturer of a toxic chemical. Now a chemical is either toxic or not toxic, is that right?

MR. BAILE: Not according to my friend at the beginning of the meeting.

MR. OVIATT: If a chemical becomes toxic because of the defect, that isn't the subject of our meeting today, is it? I thought we are just speaking of materials that are inherently toxic without any defect producing toxicity.

MODERATOR AHEARN: I believe it would be helpful to the audience, Mr. Baile, if we had more pointed discussion of the second half of this question, because it seems to me it is a question which most people in this audience are very much interested in. Will you point your remarks specifically to that question?

MR. BAILE: As Mr. Oviatt pointed out, the basic consideration in imposing liability upon a manufacturer of a chemical, which in its nature is toxic, is the obligation that is imposed upon him to disseminate the knowledge that he has of the dangers to the purchaser. Now, his only method of doing that in most instances is through labeling

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the product with an appropriate warning, stating prohibitions against particular use and providing an antidote in the event harm is encountered. Having done that, there is not much more he can do.

If, therefore, he meets that requirement—puts an adequate warning on his product—the unwillingness of an ultimate user to take advantage of the knowledge that has been made available to him, either refusing to read it or failing to understand that which is clearly understandable does not create a liability. On the contrary, it constitutes on the part of the consumer, the party injured, a fault which would bar any right of recovery that he should have against a manufacturer.

MR. OVIATT: On the other hand, what you are really saying is that the manufacturer does not have to police his customers.

MR. BAILE: I think that is a fair statement.

MODERATOR AHEARN: I believe the audience appreciated that additional contribution from both of you.

By the way, I forgot to say in opening this meeting that at the request of the panel, I want to make it clear that the members of the panel are speaking only for themselves as individuals and are not to be regarded as committing their companies in any way. I think we may assume that they and their companies are fairly close together.

We will go on to the next question now: "In what way can the producer of a toxic substance aid in securing its safe use by education, research, and development of control measures?" Mr. Hatch.

MR. HATCH: We agreed in a preliminary panel meeting this morning that this question answers itself. The point is, how can we get the producer to recognize and accept his responsibility?

We have many examples in which the manufacturers of toxic substances have recognized and assumed responsibility in this respect, even to the extent of requiring the customer to show evidence in advance that he has made adequate provisions for the safe handling of the material before they will supply it to him.

I recall when I was with the New York Labor Department that one company which was producing and distributing a highly toxic material required every potential customer in New York to get the approval of the State for their proposed control. In the case of another toxic substance one of our large chemical companies has set up an elaborate program of education of the ultimate consumer of the material, in recognition of the very important fact that, without adequate safety measures, serious difficulties were bound to result.

I would like to turn to the last item: the development of control

measures. There is a particular responsibility and opportunity here on the part of the producer because, as I said earlier, the hazard can be magnified or minimized for a given toxic material by the manner in which the process equipment operates. It is the responsibility of the producer of such materials to take part in the development of safe-process equipment so that he will be in a position to advise his customer on the kind of equipment in which he is to use this toxic material.

MODERATOR AHEARN: Thank you, Ted. Dr. Bachman.

DR. BACHMAN: I can only add to Mr. Hatch's remarks by calling attention to an action one company is taking. They bring in the customer's employees who are going to use this material and give the employees of the customer a course in the handling of it. Now this, I think, is an excellent approach when you get to extremely hazardous conditions. I don't know of anything that you can do beyond that.

MODERATOR AHEARN: Now we come to two questions which the panel believes should be grouped together also: "What procedures should be followed to determine whether any of the plant personnel are abnormally sensitive to toxic materials. In conjunction with that: "How is a health problem to be anticipated? Recognized? Proved?" Dr. McGee.

DR. McGEE: In general, there are certain principles which some of us feel should be followed.

In the first place, we must know as much as we can about the biological action of the material concerned. We like to know how it can affect the animal with which we are primarily concerned. There may be a species variation, such as the rabbit story Ted Hatch mentioned. The full story of biological action involves some understanding of the molecular structure; action at a cellular level; the details of the chemical, metabolic and other changes brought about in the body, to the extent that our research methods and our understanding of metabolism of the body allows us to define those things.

Secondly, from the standpoint of man, the worker, it is quite essential that we know who in the plant has a deviation from his optimum state of health, when, where and why. We are not able to recognize or anticipate a health problem unless we know what to look for, and actually do look periodically at this crucial and continuing experiment in which the worker is involved. To accomplish that, we must know what his situation healthwise is when he starts to work (before exposure) and at intervals thereafter.

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when using a new material, examine the worker at rather frequent intervals until they define for themselves:

1. That the average person does well under the circumstances and the control situation that exists at the plant; and

2. That in a sufficient experience they have not demonstrated an unusual sensitivity.

I refer not only to the entire group of allergies, but to some of the idiosynerasies which are not too well understood.

A part of this recognition of a hazard involves other than basic knowledge, orientation and thinking about it day by day. A responsible individual reviews some of the possibilities which may be overlooked and checks and double checks to see if they are actually occurring. If you don't look, I will assure you that the experience of most of us is that you can miss them until they force themselves on you. By looking carefully for an untoward reaction you may find it earlier than otherwise.

MODERATOR AHEARN: Thank you. Now, Dr. Bachman.

DR. BACHMAN: Once again I am in a position of backup man with very little to say on the subject, because I think Dr. McGee has pretty much said what can be said. I do note that the point at which most of the conditions arise or appear is at the start of a new plant. I think it is only by following the points as made by Dr. McGee that one can discover or uncover the abnormal sensitivity of a person. The only thing that I know of that could be done is to remove the man from the action and pray that he doesn't get worse.

MODERATOR AHEARN: Thank you, Dr. Bachman. Mr. Hatch.

MR. HATCH: I would like to add to what Dr. McGee said. In addition to the continuing observations on the men for the purpose of identifying a problem area, it is equally essential that there be parallel studies on exposure. The ultimate purpose is to compare the one with the other. So don't forget that it is the two together, the man and the environment, that have to be studied continuously in order to reveal significant relationships.

With mechanization and automation the maintenance people in a plant become more and more important. There are more of them in proportion to production men and difficult problems arise with respect to them because their exposures are so varied and uncertain. Thus, systematic and continuing studies are even more important.

DR. ZAPP: I should like to comment on a suggestion that is frequently made; that is, why can't we detect the abnormally sensi-

tive individual by some sort of screening test? For dermatitis, for example, why not a patch test before he is put into contact with the suspected material on his job?

Generally speaking, we do not recommend this procedure. I believe one of the biggest scale attempts at this sort of thing was the testing of volunteers with mustard gas at the beginning of World War II. A great many were tested in an effort to determine individual variations in sensitivity. One consequence of this program was that some of the men were sensitized to mustard gas and therefore reacted abnormally whenever they came in contact with small concentrations. So, it is not a practical procedure to weed out the hypersensitive by a preliminary testing program if we are dealing with a sensitizer.

The other comment is that we can anticipate certain types of difficulty. For example, suppose we are dealing with a chemical that produces kidney injury. It would not be wise to expose a man who has only one kidney; he might very well be abnormally sensitive. And that brings up the importance of an adequate, preplacement medical examination and a classification of a man as fit or unfit for a certain type of exposure.

DR. McGEE: May I add one thing which I think is important? It is the absolute necessity of a critical attitude in tying down the diagnosis. I know of a few areas where it is more important to cross-examine a diagnosis and prove it to the extent that it is possible to prove it than in occupational disease. The very act of having a high index of suspicion when supervising an operation with a potential hazard sometimes leads to false diagnoses that can be troublesome.

I am reminded of the incident of the plant physician who was aware that a chemical could be a sensitizer of the skin and lead to a dermatitis. He showed me a case of a very stubborn dermatitis, stubborn because the man had been removed from the exposure for six months and still had the skin lesions. I was visiting the plant at the time. I had a hunch of a different diagnosis when I saw the man's lesions, partly because I was not expecting contact dermatitis, as was the plant physician who lives with the problem every day. I asked the patient if there were members of his family who had similar skin trouble. There were two members who had similar complaints. The diagnosis proved to be scabies for all three of the patients.

MODERATOR AHEARN: Thank you very much. We will go on to the next question. "Does the usual Products Liability Policy cover any and all liability that may be imposed upon a manufacturer for damages resulting from the use of his product?

MR. BAILE: I think the answer to that question is obviously no.

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First of all, it does not cover any liability in excess of limits that are provided in the policy. Second, it does not cover the liability that might be imposed upon a manufacturer for damage to the product itself. That liability is excluded in the normal policy. Third, most product liability policies are written on what is called "accident basis." They cover liability imposed upon the manufacturer for damages arising out of the use of a product, caused by accident. Accident is used there in the sense of some event which is identifiable in point of time and place of occurrence, as distinguished from adverse effects which are cumulative over a long period of time or over a great amount of space. For that reason, it is very important, and particularly when you are considering the exposure of a manufacturer to a liability resulting from toxic effects of the products, that you keep in mind that a policy which is written on the usual accident basis is not a satisfactory policy for your purposes. In that instance, you should be certain that your policy is written on what insurance men choose to call "occurrence basis." as distinguished from an "accident basis."

I thing in one other instance the fact that it is on an accident basis is important, because that also is designed to exclude any coverage of the results of business decisions that might be made. It is pretty difficult to illustrate that in a case of products. I think it is more apparent in the case of general liability policies. You take the road contractor who has two methods of tearing up an area. One method is a little cheaper for him, but it involves exposing surrounding properties to damage by shaking or noise or something like that. The other method, which might cost him a little bit more money, would avoid that. With that knowledge, he proceeds to follow the less expensive method. That is a business decision the company has made.

MR. .T. C. WATERS: May I ask one question as to that? Why do not insurance carriers write policies on a broader basis so they get beyond the concept of accidents?

MR. BAILE: I think to answer that question you have to start out with the premise that the insurance company, if it could, would be very happy to write policies on a completely broad basis. They would be very happy to insure the total liability of industry. To do that, of course, we would have to receive the total income of each company individually, which you would be unwilling to pay by way of premium. Therefore, it is the question of balancing the risk that you have been exposed to against what you are willing to pay for, not necessarily willing, but what you can reasonably pay for.

So it is a question of isolating those hazards which are most common to industry generally and covering them, and excluding the

specific hazards of a particular company or industry which are subjected to a much greater hazard than any other part of that industry or any other industry.

The second answer to the question, however, from the standpoint of products liability, is that the insurance industry in general will write the policy on an occurrence basis. What they are going to want to know in a particular industry is what are the hazards to which that company is exposed? And they will try to measure the rate that they charge in the light of those hazards. But, as an additional point, for the company that is exposed by virtue of the nature of its product to damage arising out of the toxic effects, it is most important that they should have their policies written on the occurrence basis. I think in the main it will be an insurable risk on an occurrence basis.

MODERATOR AHEARN: Dr. McGee.

DR. McGEE: I disclaim any knowledge of product liability policies. As a physician, I would hope that no device or arbitrary factors would ever lessen the desirability and need for a manufacturer to know those things about his products which are reasonable and which he should determine prior to their use.

MODERATOR AHEARN: Thank you very much. The next question is: "Inasmuch as your industrial experience has been quite broad, what, based upon that experience, do you think constitutes the average corporate philosophy concerning management's responsibility for the safety and protection of its employees?" Dr. Bachman.

DR. BACHMAN: I think this is rather an interesting question, and, of course, can only be answered on the basis of one's own experience; and I think in arriving at any statement or any thought concerning what the average corporate philosophy is today, one must review what has happened over the course of one's lifetime. The general approach to safety 30 years ago was quite different from what it is today. The companies that were mostly interested in the safety of their men were, in a large measure, those companies where you had sort of a paternalistic feeling between the owners of the company and towards their men. I don't think there was much of a concerted effort for safety. Some, perhaps, but not too great.

Then as time went on and we grew, we have had a change in economic and sociological conditions. I think we have had management people, as a whole, become much more socially conscious towards their fellow man and conscious of their obligations to him over this 30-year period. That has created a great deal of difference in the approach to developing safety measures for employees.

In addition, I think managements over the years have recognized that safety is economically sound for a number of reasons. It has a very definite monetary value when you consider our competitive economy. Processes have grown more and more complicated; new products have appeared. This has caused the management to spend more money in order to build plants which inevitably have become complicated.

With the plants becoming more complicated and the production increasing, it has been very desirable for the management to see that they obtain the highest quality of work and the most skilled workers that they can. The skilled worker became a very intricate cog in the production wheel, and it was certainly most desirable to protect him in the best possible manner, to look out for his health and be sure that he worked safely. The loss through accidents or through some fatality would be serious, and, actually, mean a lot in dollars in production time and production effort. I think this social consciousness and these other two factors have gone a long way in improving our approach to better and safer working conditions. Furthermore, money has been saved, and this has been well recommended in the savings in the workmen's compensation fees.

Again, I think another factor that makes it worthwhile for management to have a very favorable attitude towards safety is that it increases and improves the morale of their workers, and I know in our organization we have a saying, "A safe plant is rather a happy plant." And usually, if you have a happy plant, you have your least difficulties and you get your best work.

From my own experience, I would say that whereas in bygone years when one approached expenditures for safety purposes, the question might be raised, "Is this necessary?", the attitude taken today by most corporate managements is, "Will this do good? If it is likely to do good, then put it in." I think this is rather characteristic in my experience.

MODERATOR AHEARN: Thank you very much. Mr. Oviatt.

MR. OVIATT: Dr. Bachman has pretty well covered the subject. I don't know that all those who were safety conscious 25 or 30 years ago were paternalistic, but there has been a definite change in philosophy. Twenty-five or thirty years ago there were small infirmaries that companies established with part-time medical personnel, and they sat back waiting for accidents to happen.

Now they try to prevent accidents. They go to great lengths and spend great sums of money to prevent accidents, and I think this is true of most of the large corporations. Every year large sums of

money are spent on fully-equipped hospitals in the plants and in the office buildings. They have periodical examinations made of their employees. They have safety programs and training programs for the supervisors in the plants.

All in all, industrial medicine has become a large part of the medical profession and a very important cog in an industrial organization. I know from experience that the presidents of some of the divisions of large corporations put up trophies to be competed for by the plants to see who can have the least lost-time accidents over a period.

While the accident statistics may not bear out the statements that have been made, nevertheless, there is that consciousness and a striving all the time for bettering their record: and I think the records over-all are being bettered every year. As long as employers are conscious of this safety and what it will gain, not only in a monetary way, but in a happy, well-knit organization, they are not going to let up just because they have arrived at some degree of safety. I feel that is the philosophy today.

MODERATOR AHEARN: Thank you. Now we will move on to another question: "Have there been recently substantial changes in the law respecting the liability of a manufacturer to one injured by his product?"

MR. BAILE: That term "recently" is a relative term. If I would treat it as meaning in this century, I would say yes, there have been what you might call substantial changes, a change in concept and a change in application of principle.

Prior to 1916, generally in this country, you would have heard the rule stated that a manufacturer has no liability for injuries resulting from the use of his product beyond persons who are in direct contractual relations with him. In 1916, by the famous decision of Justice Cardoza, that principle was finally broken down and in lieu of it was adopted the rule: if a manufacturer would recognize that a defectively made product of his involved an unreasonable risk of harm to remote users or persons in the vicinity of remote users, that then he was under duty to make it carefully and from that has grown the general principle now, that manufacturers are, in the main, liable for defects in their products or for hazards against which they can guard, even to those persons who have no contractual relationship with them.

Probably more important than that has been the change in the application of that rule. Needless to say, in any claim by remote users against a manufacturer, the problem of causation is a serious one. A

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manufacturer may make his product at one place and it may travel through many hands over much territory and during a long period of time before it becomes a factor in somebody's injury. The problem is then to determine whether or not some activity on the part of the manufacturer was the cause of that injury. In the main, in the past years our courts required rather specific proof of casual relationship. If there has been a major change of our law, it is the tendency of our courts—and I am one of those who thinks it is a very undesirable and unfortunate tendency—to accept what I call hypothetical or questionable proof of relationship between cause and injury. I think those two main changes that have occurred have been very substantial changes and have greatly broadened the scope of the liability of the manufacturer.

MR. OVIATT: I have very little to add. The concepts of noncontractual relationship has been broadened the last few years. I think the courts are inclined to stretch that doctrine perhaps sometimes a little too far, but that old doctrine of McPherson vs. Buick Company has opened a new thought on this question of liability, which I think is all right as long as they don't take it too far.

MODERATOR AHEARN: Thank you very much. Now, we will go on to the next question: "What are the possibilities of changing process equipment or methods of manufacture or use of a toxic material in order to reduce the potential hazard?"

MR. HATCH: I should like to speak at great length on this point, but we don't have the time. It is a very important point. There are great possibilities for changing a situation from one of great danger to one of relatively little danger through the proper design or choice of process equipment. I don't know of anything more frustrating than to work on a plant problem and to realize, while wrestling with it, that it should never have existed in the first place. Somebody along the line failed to give proper attention to the selection of the right kind of equipment so as to avoid the problem. I feel that the industrial hygienists who, up to now, have been largely concerned with hazard control though application of ventilation and other such secondary measures must, in the future, give greater consideration to redesign of the process equipment itself for purposes of hazard control.

There are endless numbers of examples of the creation of an unnecessary problem because of the failure of designers of process equipment to incorporate into their initial thinking questions of hazard and to accept from the outset a responsibility to minimize the poten-

tial hazard which is on a par with the responsibility they assume for the operation of the process itself.

DR. ZAPP: I would certainly agree with everything that Ted Hatch has said. I notice that this question really concerns three things: possibilities of changing process equipment, methods of manufacture, and use of toxic material.

I am sure that we could think of examples of all three. Ted has spoken of changing process equipment of one sort or the other. Then, the manufacturer may sometimes be able to substitute a less toxic material. As far as the hazard of use is concerned. I can think of some examples. I think it is almost a truism that we can control any toxic hazard if we are willing to go to the trouble to do it. Now, sometimes economics is a decisive factor there. That is, if you have to take extensive measures to control a hazard, it may not be economically feasible to do it.

MODERATOR AHEARN: Thank you, Dr. Zapp. Next question: "Can one distinguish between health impairment resulting from effects of handling toxic material and that resulting from fear (anxiety states) of effects from handling such materials?" Dr. McGee.

DR. McGEE: I think the answer is "yes" for certain materials and "no" for others. If a satisfactory differential diagnosis is to be made, there are two requirements. First, there must be some objective test which is specific for the effects of the material. By that I mean, by reliable chemical analysis. Second, there must be the ability to rule out a similar effect from anything else with which the worker may have come in contact inside or outside the plant. In other words, we must be able to say that a specific health impairment resulted from the material in question and under circumstances where we can rule out other possible factors producing that end result.

An example is the anticholinesterase effects of certain phosphorus-containing insecticides. You have an objective test, in most instances you have the opportunity to rule out other exposures which could alter significantly the level of cholinesterase in the blood:

There is another field, however, of materials whose effects are signs and symptoms which are rather vague. I feel the clinician cannot be sure whether such illness is a result of actual exposure to a material which is known to give such vague symptoms in the early stages. Butterflies in the stomach, problems of sleeping, malaise and the like are symptoms found frequently in the man who has an anxiety state. Sometimes the recognization that the exposure is insufficient to produce the diseased state gives us a reasonably good clue that an anxiety is responsible.

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I think all the physicians present here will recall in their experiences examples of epidemics of anxiety in groups of people because one or more workers felt that he had developed illness from a particular exposure. He talked about it and others soon felt they had the same symptoms. In some instances we have sufficient control of the environment to know exactly what were the possibilities of exposure and to say that it is impossible, under the amount of exposure for the episode to be a bona fide exposure with resulting illness. Therefore, the entire thing must be on a psychosomatic basis.

MODERATOR AHEARN: Now, we will go to another question: "How adequate are animal experiments as a means of predicting toxicity for human beings?"

DR. ZAPP: If we are trying to predict effects on the human being, then the human being himself would be the ideal experimental animal. We can't use man as an experimental animal, and, therefore, we must accept other species as an imperfect substitute.

Now, perhaps the soundest basis for predicting the effects on man from the effects on animals is that our internal anatomy and physiology are rather similar. If we are dealing with a chemical that produces liver damage in dogs and other animals, then we can be fairly sure that it will produce liver damage in man. We cannot be too sure about the quantitative relationship. There are differences in species of susceptibility.

Now, with all that, with the recognition that animal experimentation is an imperfect substitute, I think we can look with some satisfaction at results that we have obtained in predicting effects on man through animal experiments over the past 100 years. We have certainly learned a lot from the animals, and we have, with the use of perhaps arbitrary factors of safety, been guided by those results in setting up criteria for safe practices with respect to man.

By and large, we have been successful. There are exceptions. There are materials that affect man in ways that we cannot reproduce in any experimental animal, but they are, fortunately, rather rare.

MR. HATCH: I like the emphasis Dr. Zapp put on the quantitative aspects. For obvious reasons, it is not possible to translate the findings on animals for direct application to man.

How adequate are animal experiments? In some cases they are highly adequate and in some other cases they haven't been adequate. Certainly, none of us want to go away from here with the idea that the experimental animal can give us all the answers, but they have given us information of enormous value. So, there is no question that the animal plays an important part in the study of toxic agents.

MODERATOR AHEARN: We have arrived at the moment when we would welcome questions or statements from the floor. If anyone has a question to ask about any phase of the discussion of the panel, I would welcome his getting up and giving his name and asking his question or making his suggestion.

DR. ANNA M. BAETJER, Johns-Hopkins University: I know that the time is very limited, and we have not had time to cover all the questions. I would particularly like the panel to discuss two phases: one, the three questions that deal with the labeling laws and the importance of these; and two, how can the consumer determine the composition of toxic materials sold under trade names?

MODERATOR AHEARN: As a matter of fact, we had grouped those three together. Dr. McGee, will you take off on those questions?

DR. McGEE: How can consumers determine the composition of toxic materials sold under trade names? Sometimes it is almost impossible to do so, From the standpoint of a practicing physician treating acute poisoning, such information comes in too late for him to help his patient. His problem is that of taking a trade name and trying to find out what it means. He gets a chemical identity as the first step, and he still doesn't know what the material is in a pharmacologic sense. He has to have that material classified in a pharmacologic or toxicologic sense for the information to be of any help to him. If he doesn't know something of the biologic properties of the material, if he doesn't know the site of action, he will have no basis for intelligent therapy. Too frequently, in our present setup, that information comes to him a little late to be in the best interests of the patient. The labels are not big enough to contain all of this information which might be required by the physician. There are in some packages inserts of descriptive material which can be of use to him in some instances.

I think, frankly, we must improve techniques for getting the information that is required to the customer, and in turn, to his physician where there has been an accident and resulting illness. Poison control information centers may help.

MODERATOR AHEARN: Thank you very much. Dr. Bachman, you are a chemical engineer. I believe everybody would like to hear your specific answers to the question of whether a manufacturer of toxic materials can be compelled to follow labeling restrictions and cautions as recommended by the Manufacturing Chemists' Association. Also, we would like to have your comments on the current status of efforts by a number of organizations, such as the Manu-

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facturing Chemists' Association, to develop adequate labeling and to standardize labeling.

DR. BACHMAN: I don't believe the Manufacturing Chemists' Association has any authority. My answer to that is no, I don't believe manufacturers can be compelled to follow the recommendations of the Manufacturing Chemists' Association. On the other hand, I think it is highly desirable that they cooperate to the maximum degree possible, and I think the great majority of the manufacturers do attempt to do this because most of them are members of the Manufacturing Chemists' Association.

Now, as to the current status of these efforts, that is perhaps one of the most active committees in the Manufacturing Chemists' Association. In many cases, it has formulated codes and labels to be used, which I believe are being used.

Of course, I think the crux of the whole question here is for such organizations as the Manufacturing Chemists' Association, The American Medical Association, and the chemical specialty people to get together and try to formulate a coordinated policy on labeling. We are always going to have difficulties if you have several approaches to labeling. I think we must have a unified approach or, if it is broken down into compartments, these compartments must all originate from the same source. That is, they must originate from the same authority, be that authority one that results because people work together or one that is enforced by virtue of government action.

MODERATOR AHEARN: There are a number of associations, including the Manufacturing Chemists' Association, busy in this field. I believe the American Medical Association is equally active.

It seems to me, Dr. Zapp, I should ask you to devote yourself specifically to the question, "How can consumers determine the composition of toxic materials sold under trade names?"

DR. ZAPP: Before I answer that, Mr. Ahearn, I would like to make one comment on the current status of the work of these various associations. The Manufacturing Chemists' Association, through their Precautionary Committee, the Chemical Specialties Manufacturing Association, and the American Medical Association have agreed that they will work together towards wording of some uniform labeling law or at least a set of principles that will guide these various associations. The C.S.M.A. group is now meeting in Philadelphia on this very same subject. That is the current status as far as I know.

With respect to Question 21, I think that all three of the agencies I have just mentioned, the Manufacturing Chemists' Association,

C.S.M.A., and A.M.A. agree that there should be more information on product labels than there is at the present time. I believe with respect to the industrial uses of chemicals, that industry is fairly well satisfied with M.C.A.'s principles of labeling as expressed in its Manual of Warning Labels, with which I presume all of you are familiar. However, when it comes to the consumer, and particularly the user of small packages of cleaning powder or toothpaste or cement or what have you, it is agreed that there should be more information on the label so that the user will have some idea of the active ingredients and some idea of the hazards involved in an accidental exposure to material.

One of the most frequent inquiries I suppose that we get in the du Pont Company is, what happens if a child swallows a little du Pont cement? It was never intended for that purpose, of course, but the question is, what happens? Fortunately, the answer to that is, "practically nothing, don't worry about it"; but that's the thing that the person needs to be reassured about. The physicians, on the other hand, would like to see on the label the kind of information that would enable them to treat cases of accidental exposure. Now, with all the good will in the world on the part of these organizations, there are still many practical difficulties involved in formulating a set of labeling principles that will do the job to everyone's satisfaction.

The householder really wants to know how to keep out of trouble and avoid calling the M.D.'s. And so it goes.

Now, I think that something is going to be done, and out of all this activity there will be more product information on the labels. Meanwhile, we have the resources that Dr. McGee told us about, the poison control centers. There are one or two compilations that give us a good deal of information about the trade name products, and Dr. Hodge of the University of Rochester is coming out with an encyclopedia which will give more information of that type. But, ultimately, the manufacturer is the best source of information if you need it. In most of these cases where information is needed in a hurry, I think it can be best obtained by getting in touch with the manufacturer or his branch office.

MODERATOR AHEARN: Thank you, Dr. Zapp. Mr. Baile, I believe to complete the discussion, you ought to answer this question: "Are present labeling laws adequate with respect to requiring warning and preventive measures as to toxic qualities?"

MR. BAILE: I think there we first have to define the sense in which we are using the term adequate. If we use the word in the sense that compliance assures immunity from liability for the manu-

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facturer, our answer would be one thing: and on the other hand, if we mean by adequate in the sense of sufficient requirements and enforcement to protect the public from injury, I think there is a different answer.

From the first standpoint, labeling laws as such do not give immunity from liability to a manufacturer by mere compliance with the labeling law. The common law itself imposes a duty upon the manufacturer to bring to the attention of the users of his product and people who are in the vicinity of its use, the dangers which are inherent in its use or may flow from it. He must comply with that standard.

Considering it from the second standpoint—of the adequacy of the laws to protect the public from injury—I think we have to say that the laws as such are inadequate. I am also one of those who has the view that the laws will always be inadequate, because I think there is necessarily a lag between technology and its development, and the ability of legislators to act.

For that reason, I have always felt that effective labeling legislation should be broad and general in its terms and depend for effectiveness upon detailed and limited regulations issued pursuant to that broad general statute. I think when this is done, we are then able to more quickly adopt regulations to changing conditions and to more effectively enable industry to comply, because they can be more specific and thus more clearly understood.

As you know, the number of labeling statutes that exist today are bad. Even the person who confines his attention to that subject and nothing else, and there are few people who do, not only has three or four federal statutes with which he must deal, but there are some 28 separate state statutes, and then there is a multitude of local ordinances that have other effects upon us. They have many advantages from the standpoint of imposing criminal liability. In all instances, however, they are not effective in enabling authorities to take out of the market the products that do not meet the requirements of those statutes, and needless to say, the only way that you can really effectively prevent harm from substances that are improperly in the market is to exclude them from the market by confiscation.

Mr. Ahearn, I would say by way of summary that, yes, our labeling laws are inadequate. They need to be changed and I am hopeful they will be.

MR. WATERS: I think the audience would be interested in the question of whether industries should tell their employees that the material they are handling is toxic or carcinogenic.

MODERATOR AHEARN: I think we decided to group that question with the question, "Should information on the presence of toxic exposures in industry, obtained by health departments, be given to labor unions and employees or only to management?" Dr. McGee.

DR. McGEE: In answer to the first question, I have found no way to conduct a program which will get the cooperation of the employees without giving them the reasons for it. These people are entitled to it.

I think the only successful programs that I have observed elsewhere, outside of our organization, are those in which the employee has some knowledge of why he follows certain operating procedures regardless of what the end effect is of the material or the end effect might be in the materials that he handles. Therefore, I would say that we must give the employee that knowledge so that he can understand and use it in coming to a conclusion as to why he must do certain things to protect himself. I think the same statements apply to organized groups and safety committees and union leaders.

MODERATOR AHEARN: You draw no distinction as to information made available?

DR. McGEE: That's right.

FLOOR SPEAKER: It is required in Ohio to tell the employees of the toxic material in the department and it is required to repeat it to them monthly.

MODERATOR AHEARN: Thank you very much.

MANFRED BOWDITCH, Lead Industries Association: I think there were two important matters not covered in the discussion of labeling. First of all. Dr. McGee said that very frequently the nature of the toxic substances gets to the doctor too late. I wonder if he is aware of the fact that the American Academy of Pediatrics has now established over 30 poison control centers from coast to coast. There are 15 in the State of Florida alone. All of them are manned by telephone 24 hours a day. All are in charge of a physician, and at a meeting only day before yesterday it was agreed that the Public Health Service will be asked to take over the national direction of these centers and see that current information is supplied to all of them. I really think that this is of importance. With regard to the matter of warning labels, there is a body of laws known as the Pharmacy Laws, which were designed to protect the public in purchases over drug store counters. In a court in one of the southern states recently, one of these laws was interpreted to cover a shipment of litharge in industry and an award of $18,000 was made on that

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basis, and at the present time I understand that further suits amounting to $80,000 are before the courts. I am told that only about half a dozen of the states have adequate exemptions to prevent such misinterpretations. Only about three weeks ago I discussed this with representatives of the Manufacturing Chemists' Association, and it is my understanding that they will take steps to try to bring proper exemptions into the laws of the other states.

MR. T. J. LANIGAN, General Electric Company: I would like to hear discussion on the question: "How is it best possible to maintain a continuing safety awareness among employees engaged in hazardous occupations involving the use of toxic materials?"

MR. HATCH: To have an effective safety program the people who are attempting to do this must maintain among themselves an awareness of safety needs that is stronger than the safety awareness of the employees. I have no particular procedure to suggest since I have had no special experience in developing and maintaining such awareness. I do know from experience, however, that there is great risk if such awareness is not maintained and developed on the part of everybody concerned. We have all seen good programs break down because of lack of maintenance of awareness.

MODERATOR AHEARN: Dr. Zapp, would you comment?

DR. ZAPP: I will only add to what Ted Hatch has said. I think the promotion of the continual awareness of the safety program among employees is a responsibility of supervision. Supervisors will only do it if they know that higher management wants them to do it. Now, when safety policy is set at the top level of company management and is passed on down through the various supervisory channels to the employees, then I believe the program can be maintained adequately, and the employees will have a continuing awareness of the program. If the foreman goes around an area without wearing a mask where a mask is required or without wearing safety glasses in an area where safety glasses are required, obviously, by his example, he is going to undermine the whole program. If, on the other hand, he goes in with a mask on or goes in with safety glasses on and insists that others do likewise, he has a good chance of enforcing the rules and maintaining the continued awareness that this question speaks of.

MODERATOR AHEARN: Thank you. Mr. Baile, you are the general counsel of an insurance company. It seems to me you are the panelist to answer these two questions: "What methods are available to insurance carriers to assist their insureds in the protection of employees and the purchasing public from the hazards of toxic ma-

terials?" and, "What methods are available to insurance carriers to assist small industries in the detection and control of hazardous conditions?"

MR. BAILE: I think those questions are primarily directed to the insurance carriers' place in contributing towards the reduction of accidents in industry, either among the employees or in users of the product or in third parties who might be otherwise affected by the activity of the employees of an industry. I think that it can probably come under eight points:

First is the function that Dr. Zapp has already mentioned, that is, through the sale of the insurance there is brought to the attention of top management the importance of the safety program. It has a very direct influence on the amount of costs, a very substantial item in the cost of any industry. By bringing that to bear on the top management, you get the influence which Dr. Zapp suggested, which is so necessary, of that philosophy going down through the various echelons of the company.

Also, I think it is that very force that brought about the changes in the philosophy of industry that we referred to earlier. I think the safety awareness of industry has been, to a great extent, brought about by the influence of the salesmanship, if you will, of the insurance industry. But in a more practical sense, the insurance industry contributes through its engineering facilities and its suggestions and participation in the development of safety programs in any industry. This consists of arranging and conducting safety meetings, distributing the proper type of literature, and the proper type of postings. Secondly, by its own engineering, it supplements the safety program of a company in ascertaining where the hazards in that industry exists. And in doing so, it approaches it, I think, with a greater objectivity, because it is uninfluenced by those unconscious influences which company people are subject to, such as the costs of changing a process, the reduction in time, or the increase in time which some change of process to incorporate a safety factor would involve.

Another way in which they can contribute is in the preparation of a catastrophe plan for specific hazards. Insurance carriers can aid in the development of drills so that companies are prepared in the event those catastrophes occur.

Another manner in which they aid is in the supplying of information for the preparation and distribution of safety material. The insurance industry acquires the collective knowledge of many industries and can bring that knowledge to the aid of a particular company.

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agent manuals, which is a method of coordinating the receipt of toxic materials into a plant, so that knowledge comes to the attention of the production personnel of the nature of the product that is being brought in, in order that proper safety precautions can be taken.

Finally, I think the contribution that the insurance carrier can make is to maintain the awareness of safety. I think the great difficulty that occurs in many industries is that you develop a program to avoid accidents and prevent accidents. It has a peak, and then it tends to slacken off. Every once in awhile it needs to be rejuvenated. I think the fact that the engineers of the insurance carrier and its staff come in regularly and constantly bring safety to the attention of the people at the production level helps establish the habit of safety and it is that habit which in the long run will prevent many accidents.

MODERATOR AHEARN: On that same point, will you elaborate on methods available to insurance carriers to assist small industries?

MR. BAILE: I might say this: I think there is a distinction that should be drawn there. In some industries, because of their size, they are able to employ the technical talent which is required in effecting a sound safety program; whereas in other industries, because of the small number of employees they are not able to have people who will specialize in those particular problems. In that instance, the insurance carriers become another arm of the company and supply it with technical talent which it doesn't have available within its own personnel.

MR. OVIATT: Mr. Baile, isn't it true that the insurance companies look to the larger manufacturers many times to get information on these toxic materials, on the processes that are used and the safety devices that may be necessary?

MR. BAILE: Very much so.

MR. OVIATT: And then they can impart that knowledge to the smaller companies that are not in a position to hire these highly trained experts?

MR. BAILE: I would say that is definitely true.

MR. OVIATT: There is also another way—I think you will bear me out on this—that insurance companies have been helpful. That is in making counts—fume counts, petrographic analyses, and so forth. They go into the plants to make these and make their recommendations.

MR. BAILE: Yes, that is right.

MR. OVIATT: I would like to add just one word if I may to the earlier question on efforts to develop adequate labeling and to standardize labeling. Those on the panel who spoke to that question failed, I think, to mention the fact that the Manufacturing Chemists' Association at present has a law, a proposed federal law for labeling and for the far more important matter of confiscation. You can have criminal statutes all over the place, but throwing a man in jail or fining him $10,000 will not save the life of someone using a chemical that is not properly labeled. I think this confiscation feature is all-important. This new law that M.C.A. proposes does take care of that adequately as to the defining of what a poison is and setting forth tests for determining a poison.

Now, what will become of that law, no one knows. That is the present status of the M.C.A.'s efforts.

MODERATOR AHEARN: Thank you.

DR. BACHMAN: I would like to comment in reference to earlier questions. To maintain safety awareness you must say that a company has to tell its employees what the nature of the materials is which they are handling, whether they are toxic or carcinogenic, because you can never have a safety program unless you give the people working with toxic or carcinogenic materials such information. I don't think that was adequately emphasized before.

I think as far as the question of the most economical and best way a small plant can get help on problems of toxicity and industrial hygiene, the obvious answer is a good consultant. I don't know if there is enough consulting work done in a continuous manner with the different smaller companies.

DR. THOMAS L. SHIPMAN, Los Alamos Scientific Laboratory: I would like to have this question discussed: "If a manufacturer conforms to the highest standards of an industry in the manufacture of his product, will that be a complete defense in an action against him for injuries resulting from his product?" In placing this question before the panel, I would like to remind them of the experience of some of the electrical product manufacturers and their difficulties with beryllium.

MODERATOR AHEARN: Mr. Oviatt, let me ask you to answer that question.

MR. OVIATT: I think that can be categorically answered as "no." There have been cases where a court has held that even though the standards of the industry have been followed, the highest standards, that under the circumstances those standards weren't high

enough. Each individual manufacturer must assess his own product and go beyond, under certain circumstances, the standards set by the industry. That is so even though labeling laws are followed.

MODERATOR AHEARN: Mr. Baile, would you care to add something to that answer?

MR. BAILE: By way of addition: The responsibility of the manufacturer is essentially one to conform with the standard of care that the law imposes. Now, that standard may be imposed either by statute, by judicial decision or by what is probably a pretty vague standard, namely, the standard of care of a reasonable man acting under those circumstances.

Now, in determining whether that third standard has been met, a court or jury should take into consideration what the practices and standards of an industry are, but they are only a measure for the fact-finder to use and are not binding upon them. In other words, the widespread adoption of a particular method or practice will be a test for determining whether or not reasonable care was used. But the courts have said that 12 lay people, who don't know a thing about the business, can say you could have used more care. I can't believe that reasonable care can be any more than an industry would use, because I don't think industry would ever adopt, as a widespread practice, a careless practice if there were a safe one. The court seems to think that 12 jurors can say they can.

I might say, whenever I have been confronted with that problem, I have always remembered the one judge who said the only reasonable man he ever knew was his wife's first husband.

MR. SCHWENZFEIR, JR., Brush Beryllium Company: I would like to have the expression of the panel on the distinction in labeling procedure between what is required for a retail product and what is required for industrial products. It has been inferred that it is not particularly important to exercise greater care in labeling if the product is to be handled in commercial use, though it may be in retail.

It is implied in another question that the manufacturer of the toxic material can pass the responsibility on to the corporate purchaser, who, in turn, passes the hazard on to his employer. I wonder if that is really correct.

MR. BAILE: If I understand your question, it is this: Whether a manufacturer has a duty with respect to giving warnings as to the attributes of the product to the ultimate consumers where he sells, let's say, to a middle purchaser who repackages it—or something like that?

MR. SCHWENZFEIR, JR.: No, intermittent handler is another production concern, like this bulk packaging that was in one of the earlier questions of the program.

MR. BAILE: Your question, then, concerns the liability of the manufacturer who distributes in bulk to people who handle that product in transportation and who are employees of the purchaser who use it in some manufacturing process?

MR. SCHWENZFEIR, JR.: Right.

MR. BAILE: I would say by way of answering that, first of all, I.C.C. regulations, of course, control to a large degree the requirements of labeling in transportation. Now, they are designed primarily for the protection of employees who are handling it in transportation, and, of course, conformance with that is required and if there is a lack of conformance and injury results to employees of carriers who are transporting it, liability would be imposed.

From the standpoint of the employees of the purchaser of the product, the problem there, as I see it, is this: The law imposes upon the manufacturer the obligation to give warning, reasonably calculated to call to the attention of the users or potential users of the product the hazards that are apparent in that product.

Now, notice, it is a duty of reasonableness that is imposed upon them. It would be an utter impossibility for the manufacturer of carbon tetrachloride, let's say, to go to every employee in every manufacturing plant that uses that and inform them as to the hazards that are involved in the use of it. So, the law recognizes, under those circumstances, that if the manufacturer brings to the attention of the purchaser whose employees are going to use it, the hazards of that product, or if the purchaser without having it brought to his attention is aware of the hazards of that product, then there is no obligation on the part of the manufacturer to inform them, because the law never requires a man to do a vain act. You don't have to tell somebody the dangers in a product when he already knows them. Then the law imposes upon that employer the duty of providing his employees with a safe place to work and of passing on knowledge of hazards to the employees so the employee can take such action and exercise such care as is necessary for his own protection.

Does that answer the question or am I still missing it.

MR. SCHWENZFEIR, JR.: That's it. Thank you.

MODERATOR AHEARN: Now, is there another question from the floor?

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MR. W. W. HODGE, Koppers Company, Inc.: I would like to hear discussion on the question of how industry can best work with governmental groups in order to be certain that regulations for the control of hazardous materials are proper and reasonable.

MODERATOR AHEARN: Mr. Hatch, we had assigned you to answer that question.

MR. HATCH: I am not certain what the framer of this question had in mind—obviously, there are many different answers to it.

Industry, presumably, does have a large volume of information that can be best utilized by working with governmental agencies in order that the proper regulations be formulated. I have in mind one very specific way in which industry is working with an official agency to make sure of proper regulations, and that is in the State of New York, where under the procedures for developing or regulating codes for industry, it is required that an advisory committee be formulated, including representatives from the industries directly involved, those who supply equipment to be used in industry, representatives from labor unions, and so on.

Now, I think the important point here is this: in the very framing of this procedure, recognition is given to the fact that the problem pertaining to the use of a particular toxic substance in one particular industry may be different from the problem that arises in the use of that same toxic substance in some other industry, and that to be reasonable regulations must recognize this. Regulations developed from this point of view are distinguished, for example, from a general regulation which consists principally of a list of permissible concentrations. Take carbon monoxide, for example: adequate regulations for control of this hazardous gas should be different from regulations governing its control in steel mills.

This is recognized in the New York procedure, and provisions are made for the active participation in formulation of industry codes by those people from the industries who do have needed information and experience. Obviously, to be objective, it must be agreed by all those who do participate that the purpose is to come out with a regulation which will, in fact, prevent ill health or accidents.

We had in this room not long ago a public meeting which had the same purpose here in Pennsylvania. Prior to the official adoption of regulations pertaining to a certain industrial hazard, people from the industries who could bring important information and experience to bear on the problem were invited to attend and contribute suggestions which would make the final code more effective. I believe that the industries that do have this information should welcome and, indeed,

should search for opportunities to bring this information to the official agencies and work with them in translating it into reasonable regulations.

MODERATOR AHEARN: Now, we have room for about one more question. Who has a question to ask?

R. C. ERICKSON, Aluminum Company of America: How would you propose to bridge the gap between safety and the business revealing trade secrets when such became necessary in the interest of safety?

DR. BACHMAN: Of course, the question of trade secrets is rather an interesting question. If you have rather a fundamental patent on a process, you usually are adequately protected.

Let's try to confine ourselves to the area where we say the patent protection is not available. I think this is going to be a tough one. Frankly, I think about the only way that it could be handled would be—well, there are two ways. If the number of companies involved were small, I think it likely that Company A possessing the trade secret might be quite willing to make the information available to Company B with the sole restriction that this information not be used by Company B except insofar as it was used for the purposes of protecting the health of the employees or for rendering the work safely. If the secret information or the confidential information, let us say, were to be used for purposes of profit in the manufacture of the item, there Company A would properly expect a remuneration from Company B. This is fairly standard without the element of safety.

There are a lot of companies today that go out and deliberately buy confidential information rather than patent information. When you go beyond the relationship existing between the few companies and try and say that this is something that would be broadly applicable to a great number of companies, I don't know how you could do that except through some form of perhaps very fine social feeling, let us say, social consciousness on the part of the company possessing those trade secrets and indicating a willingness to make available to their fellow countrymen at large such information. I think that is the only other possible approach whereby you can achieve that.

So, I think you have two cases; one, where the number of companies involved are limited, this can be handled. Where the companies involved are not limited and very large, then you must depend, I believe, entirely upon the social consciousness of the management of the company holding the trade secret.

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MODERATOR AHEARN: You would never think it wise to undertake concealment if the price of concealment was to bring difficulties to a man's health?

DR. BACHMAN: Of course, I am a little bit biased. I don't believe people are such blackguards that they would do those things.

MODERATOR AHEARN: Gentlemen. I think I anticipate the wishes of the audience when I express to Dr. McGee, Dr. Bachman, Mr. Baile, Mr. Oviatt, Dr. Zapp, and Mr. Hatch, your appreciation of the contribution which they have made to our knowledge. We have had a distinguished panel, and I hope and believe that we have had a very profitable session.

I would like to say on behalf of the panel, you have been a good audience. You have been very attentive and very courteous. and that has inspired the panel to do a good job. You have to have a good audience to have a good panel. We have had both here today.

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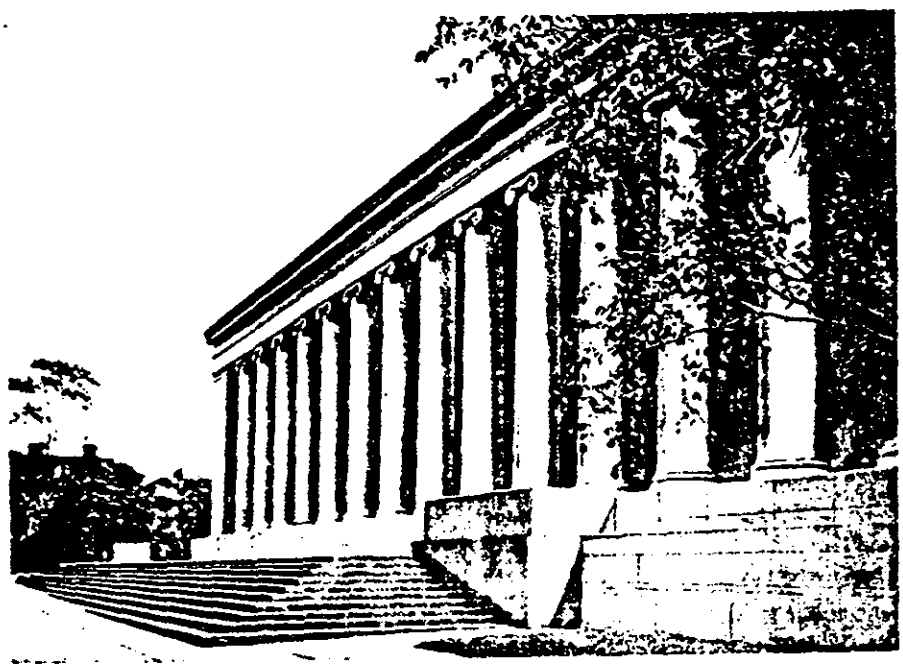
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