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# NATIONAL CONFERENCE ON POLYCHLORINATED BIPHENYLS

## (NOVEMBER 19-21, 1975, CHICAGO, ILLINOIS)




Sponsored by: Environmental Protection Agency
In cooperation with:
Department of Agriculture
Council on Environmental Quality
Department of Health,
Education and Welfare
Department of the Interior

CONFERENCE PROCEEDINGS

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TOXIC SUBSTANCES
WASHINGTON, D.C. 20460

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Conference Proceedings

# NATIONAL CONFERENCE ON POLYCHLORINATED BIPHENYLS

(November 1975, Chicago, Illinois)

Sponsored by

ENVIRONMENTAL PROTECTION AGENCY

in cooperation with

DEPARTMENT OF AGRICULTURE
COUNCIL ON ENVIRONMENTAL QUALITY
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
DEPARTMENT OF THE INTERIOR

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*Prepared for*

**ENVIRONMENTAL PROTECTION AGENCY**
**OFFICE OF TOXIC SUBSTANCES**
**WASHINGTON, D.C. 20460**

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MONS 063656

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MONS 063657

## FOREWORD

The proceedings for the "National Conference on Polychlorinated Biphenyls" is the fourth report submitted under Contract No. 68-91-2928 to the Office of Toxic Substances for the Environmental Protection Agency. The three previous proceedings submitted under this contract dealt with Environmental Aspects of Chemical Use in Rubber, Well-Drilling, and Printing Operations. The PCB Conference was held at the Pick-Congress Hotel, Chicago, Illinois, on November 19-21, 1975.

The objectives of this conference were to bring together the latest data and best available expertise to help clarify the problems associated with the manufacture, use, and disposal of PCB's; to assess the effectiveness of steps taken to reduce the problems associated with PCB's; to provide a platform for interested parties to present previously neglected data concerning PCB's; and to help clarify the feasibility and complications of steps to reduce the problems associated with PCB's.

Dr. John L. Buckley, Consultant, Office of Research and Development, Environmental Protection Agency, Washington, D.C., was the General Chairman of the conference.

Mr. Thomas E. Kopp, Office of Toxic Substances, Environmental Protection Agency, Washington, D.C., was the Technical Coordinator of the conference.

Mr. Karl E. Bremer, Surveillance and Analysis Division, Region V, Environmental Protection Agency, Chicago, Illinois, was site coordinator and facilitator.

Mr. Franklin A. Ayer, Manager, Technology and Resource Management Department, Research Triangle Institute, Research Triangle Park, N.C., was the Conference Coordinator and Compiler of the proceedings.



MONS 063658

## ACKNOWLEDGMENTS

The National Conference on Polychlorinated Biphenyls owes its success to many, many people--to the organizers who arranged and accomplished such a massive undertaking, to the program chairmen and speakers who contributed so much insight and information, and most importantly, to the attendees whose interest and response made it all so worthwhile.

My special thanks to the Honorable Russell Train and the Honorable Nathaniel Reed for their supportive remarks at the Conference. Also, special thanks go to Mr. Francis Mayo, Director of EPA's Region V, Chicago; Mr. Karl Bremer of his staff; and Mr. Thomas Kopp of the Office of Toxic Substances for their superlative organizational work.

In extending appreciation to one and all, I also express gratitude to Mr. Franklin A. Ayer of the Research Triangle Institute, and his staff members Loren Clarke, Roger McGuffey, Brenda Idol, Helen Cantwell, Dianna Morgan, and Denise McCampbell for the smooth manner in which the conference proceeded, and the efficient operation of the conference facilities and support services.

John L. Buckley
General Chairman


MCNS 063659

## Table of Contents

(*indicates speaker)


Page

**18 November 1975**

Opening Remarks . . . . . 1
John L. Buckley, Ph.D., General Chairman

Keynote Address: Environmental Protection $R_x$ for Public Health . . . . . 5
The Honorable Russell E. Train

Session I: HEALTH EFFECTS AND HUMAN EXPOSURE . . . . . 11
David P. Rall, M.D., Ph.D., Session Chairman

Introductory Remarks . . . . . 13
David P. Rall, M.D., Ph.D.

Some of the Recent Findings Concerning Yusho . . . . . 14
Masanori Kuratsune, M.D.,*
Yoshito Masuda, and
Junya Nagayama

Pathological Findings Associated With Chronic Experimental Exposure to PCB's . . . . . 30
Renate Kimbrough, M.D.

Summary of Toxicological Studies on Commercial PCB's . . . . . 35
J. C. Calandra, M.D., Ph.D.

Pathobiological Responses of Primates to Polychlorinated Biphenyl Exposure . . . . . 43
James R. Allen, D.V.M., Ph.D.,* and
D. H. Norback

PCB Chlorination Versus PCB Distribution and Excretion . . . . . 60
H. B. Matthews, Ph.D.,* and
M. Anderson, Ph.D.

Enzymatic and Other Biochemical Responses to Selected PCB's . . . . . 57
D. J. Ecobichon, Ph.D.

Toxicology of Selected Symmetrical Hexachlorobiphenyl Isomers: I. Biological Responses in Chicks and Mice . . . . . 67
Marco Biocca, M.D.,*
J. A. Moore, D.V.M.,
B. N. Gupta, B.V.Sc., Ph.D., and
J. D. McKinney, Ph.D.

Toxicology of Selected Symmetrical Hexachlorobiphenyl Isomers: Correlating Biological Effects with Chemical Structure . . . . . 73
James D. McKinney, Ph.D.




MONS 063660

Page

Toxicity of 2,3,7,8-Tetrachlorodibenzofuran—Preliminary Results . . . . . 77
John A. Moore, D.V.M.,
B. N. Gupta, B.V.Sc., Ph.D., and
J. G. Vos, D.V.M., Ph.D.

Session II: USES, SOURCES, AND IDENTIFICATION . . . . . 81
David Garrett, Session Chairman

Introductory Remarks . . . . . 83
David Garrett

Characterization of Polychlorinated Biphenyls . . . . . 84
James P. Mieure, Ph.D.,*
O. Hicks,
R. G. Kaley, Ph.D., and
V. W. Saeger, Ph.D.

Overview of Analytical Identification and Spectroscopic Properties . . . . . 94
Stephen Safe, Ph.D.

Production and Usage of PCB's in the United States . . . . . 103
Robert L. Durfee, Ph.D.

PCB Disposal, Reclaiming, and Treatment . . . . . 108
Thomas E. Kopp

Sources of Polychlorinated Biphenyls in Wisconsin . . . . . 124
Stanton Kleinert

Polychlorinated Biphenyl Usage and Sources of Loss
to the Environment in Michigan . . . . . 127
John L. Hesse

General Discussion of Session II . . . . . 134

**20 November 1975**

Session III: ENVIRONMENTAL FATE AND OCCURRENCE . . . . . 135
Ian C. T. Nisbet, Ph.D., Session Chairman

Introductory Remarks . . . . . 137
Ian C. T. Nisbet, Ph.D.

Residues of Polychlorinated Biphenyls in the General Population
of the United States . . . . . 139
Frederick W. Kutz, Ph.D.,* and
S. C. Strassman



MONS 063661

Table of Contents (con.)

Page

PCB Residues in Human Adipose Tissue and Milk . . . . . 144
Donald Grant, Ph.D.,*
J. Mes, and
R. Frank

Levels of PCB's in the U.S. Food Supply . . . . . 147
Charles Jelinek, Ph.D.,* and
P. E. Corneliussen

Levels of PCB's in Canadian Commercial Fish Species . . . . . 155
John M. Graham

The Occurrence of PCB in the National Fish and Wildlife Monitoring Program . . . . . 161
Charles R. Walker

Trends of Polychlorinated Biphenyls in Three Lake Michigan Fishes . . . . . 177
Wayne A. Willford, Ph.D.,*
Robert J. Hesselburg, and
Lawrence W. Nicholson

A Note on Polychlorinated Biphenyls in Air . . . . . 182
Frederick W. Kutz, Ph.D.,* and
Henry S. C. Yang

Polychlorinated Biphenyls in the Surface Waters and Bottom Sediments of the Major Drainage Basins of the United States . . . . . 183
D. Steve Dennis, Ph.D.

PCB's in Agricultural and Urban Soil . . . . . 195
A. E. Carey and
J. A. Gowen
(Presented by D. Steve Dennis)

Marine Inputs of Polychlorinated Biphenyls off Southern California . . . . . 199
David R. Young,
Deirdre J. McDermott,* and
Theodore C. Heesen

PCB Contamination of Southern California Marine Organisms . . . . . 209
Deirdre J. McDermott,*
David R. Young, and
Theodore C. Heesen

Transport of Chlorinated Hydrocarbons in the Upper Chesapeake Bay . . . . . 218
T. O. Munson, Ph.D.,*
H. D. Palmer, Ph.D., and
J. M. Forns



MONS 063662

Page

Recent Studies of Transport of PCB's to Marine Environments . . . . . 230
Robert W. Risebrough, Ph.D.

Uptake of Three Polychlorinated Biphenyls, DDT and DDE
by the Green Sunfish, *Lepomis Cyanellus* Raf . . . . . 236
James R. Sanborn,
William F. Childers, and
Robert L. Metcalf
(Paper previously published but not presented at conference.)

Laboratory Model Ecosystem Studies of the Degradation and Fate of Radiolabeled
Tri-, Tetra-, and Pentachlorobiphenyl Compared with DDE . . . . . 243
Robert Metcalf,
James R. Sanborn, Ph.D.,
Po-Young Lu, and
Donald Nye
(Paper previously published but not presented at conference.)

Environmental Transport and Occurrence of PCB's in 1975 . . . . . 254
Ian C. T. Nisbet, Ph.D.

General Discussion of Session III . . . . . 257

Session IV: ECOLOGICAL EFFECTS AND EXPOSURE . . . . . 259
Donald I. Mount, Ph.D., Session Chairman

Introductory Remarks . . . . . 261
Donald I. Mount, Ph.D.

Summary of Recent Information Regarding Effects on PCB's
on Birds and Mammals . . . . . 262
Ray C. Stendell, Ph.D.

Pre-1972 Knowledge of Nonhuman Effects of Polychlorinated Biphenyls . . . . . 268
Charles R. Walker

PCB's: Effects on and Accumulation by Estuarine Organisms . . . . . 282
David J. Hansen

Summary of Recent Information Regarding Effects of PCB's
on Freshwater Organisms . . . . . 284
Alan V. Nebeker, Ph.D.



MONS 063663

Page

Distribution and Excretion of [$^{14}$C]-2,4,5,2'5'-Pentachlorobiphenyl in the Lobster (*Homarus americanus*) and the Dogfish Shark (*Squalus acanthias*) . . . . . .292
John R. Bend, Ph.D.,*
Larry G. Hart, Ph.D.,
Anthony M. Guarino, Ph.D.,
David P. Rall, Ph.D., and
James R. Fouts, Ph.D.

Session V: ECONOMICS AND SUBSTITUTES . . . . . .303
Warren Muir, Ph.D., Session Chairman

Introductory Remarks . . . . . .305
Warren Muir, Ph.D.

PCB's in Capacitor Applications . . . . . .306
Richard Rollins

The Economic Impact of a Ban on Polychlorinated Biphenyls . . . . . .309
Duncan MacArthur* and
Stephen F. Nagy

The Use of Dow Corning® Q2-1090 Dielectric Liquid in Power Transformers . . . . . .312
Richard H. Montgomery

Dow XFS-4169L: An Environmentally Acceptable Capacitor Fluid . . . . . .314
Dean Branson, Ph.D.

Chlorinated Biphenyl Dielectrics—Their Utility and Potential Substitutes . . . . . .317
David Wood

Some Comments on Alternatives to PCB's . . . . . .325
Bruno Rey Coquais

PCB's and Their Substitutes – A Brief Look at Some Examples of Past Tradeoffs . . . . . .332
Dale Hattis, Ph.D.,* and
Albert Murray, Ph.D.

ENJ–2065–An Electrical Insulating Fluid . . . . . .334
E. J. Inchalik, Ph.D.

General Discussion of Session V . . . . . .338



MONS 063664

Page

Session VI: GENERAL SESSION . . . . . .341

Introduction
John L. Buckley, Ph.D., General Chairman . . . . . .343
Christopher M. Timm, Session Chairman . . . . . .343

Statements on Behalf of Commercial Fishing Interests, Green Bay, Wisconsin
Jean Hermes . . . . . .343
Glorianne Hermes . . . . . .343
Gene Lambrich . . . . . .344

Statement on Behalf of National Fisheries Institute, Washington, D.C. . . . . .344
Lee Weddig

PCB Body Burdens Deny Full Use of the Great Lakes Fishery Resource . . . . . .345
Carlos M. Fetterolf, Jr.

Primate Study . . . . . .347
Wilbur P. McNulty, M.D.

Ultrastructural Features of Gastric Mucosa and Sebaceous Glands After
Ingestion of Aroclor 1242 by Rhesus Monkeys . . . . . .350
Mary Bell, Ph.D.

The View of the Paper Industry on the Occurrence on PCB's
in the Environment and the Need for Regulation . . . . . 359
Paul E. Trout

Statement on Behalf of Westinghouse Electric Corporation,
Pittsburgh, Pennsylvania . . . . . .361
Bernard A. Kerns

Statement Relating to Polychlorinated Biphenyls on Behalf of
the Wisconsin Paper Council . . . . . .362
James S. Haney

Statement on Behalf of United Electrical Workers Union,
New York, New York . . . . . .364
David Kotelchuck

Better Late Than Never: The Case for Treating PCB's
As Toxic Substances Now . . . . . .365
Lee Botts

A Failure of Government . . . . . .367
Richard R. Knabel



MONS 063665

Page

Statement of a Concerned Citizen . . . . . .369
Eileen Johnston

Letter to Mr. Russel B. Train, Administrator,
U.S. Environmental Protection Agency . . . . . .371
Ray Oltmanns

A Call for Local Government Action . . . . . .372
State Senator Burnett Bauer

Statement on Behalf of Minnesota Pollution Control Agency,
Rolesville, Minnesota . . . . . .373
Barry Schade

Statement on Behalf of Bio-International, Inc.,
Woods Hole, Massachusetts . . . . . .376
Richard T. Ferry

The Duwamish Spill
Major Gordon Goff . . . . . .377
John S. Thompson . . . . . .378

Chlorination of Waters for Disinfection – A Study of the Production
of Undesirable Chlorinated Products . . . . . .379
Richard E. Johnsen, Ph.D.

Statement on Behalf of Tivian Laboratories, Providence, Rhode Island . . . . . .384
Herbert Gilner

The Need for Cost-Benefit Analysis in Toxic Substance Usage . . . . . .394
A. Eatock

Comments and Conclusion
Christopher M. Timm . . . . . .400
Carlos Fetterolf, Jr. . . . . .400
John Chastam . . . . . .401
John L. Buckley, Ph.D. . . . . .401

COMMUNICATIONS TO THE CONFERENCE . . . . . .403

Some Additional Comments With Respect to Ambient Air Sampling for PCB's . . . . . .405
Gordon H. Thomas

"Dow Imbiber Bead" . . . . . .405
Jack Taylor



MONS 063666

Page

Citizen Involvement Awareness of Communication . . . . . 405
Dorcas Thompson

Letter to Conference on Polychlorinated Biphenyls . . . . . 406
Susan E. Caswell

Letter to the Administrator of the Environmental Protection Agency . . . . . 407
Mrs. Meredith C. Tucker

Letter to Lake Michigan Federation . . . . . 408
Chairperson, Pesticide Committee, Knob & Valley
Audubon Society of Southern Indiana

Letter to the Environmental Protection Agency, Region V . . . . . 408
Douglas V. Whitesides, Jr.

**21 November 1975**

Session VII: APPROACHES TO CONTROL . . . . . 409
John L. Buckley, Ph.D., Session Chairman

Introductory Remarks . . . . . 411
John L. Buckley, Ph.D.

A Review of Federal and State Government Roles in Controlling Impacts
of PCB's on the Environment . . . . . 412
A. Karim Ahmad, Ph.D.

FDA Regulation of PCB's in Food . . . . . 428
John R. Wessel

Programs and Authorities of the Environmental Protection Agency . . . . . 431
Walter C. Barber

U.S. Federal Agency Roles and Actions: The Department of the Interior . . . . . 434
The Honorable Nathaniel P. Reed

U.S. Federal Agency Roles and Actions: National Institute of
Occupational Safety and Health . . . . . 438
Richard A. Rhoden, Ph.D.

Proposed Canadian Regulatory Measures for PCB's . . . . . 440
Morris F. Millson, Ph.D.

PCB's in Foods: A Look at Federal Government Responsibilities . . . . . 443
Joseph Highland, Ph.D.



MCNS 063667

Page

Concerns and Recommendations of the National Marine Fisheries Service Regarding Approaches to Control the Polychlorinated Biphenyls Problem . . . . . 451
Thomas J. Billy

The Role of the Coast Guard in PCB Pollution Control . . . . . 453
Lt. Cmdr. J. A. MacDonald

Considerations by the Department of Transportation . . . . . 454
Alfred W. Grella

Observations on and Summary of Session VII . . . . . 455
Alfred Kolbye, M.D., M.P.H., J.D.

Session VIII: SUMMARY SESSION . . . . . 457
John L. Buckley, Ph.D., Discussion Chairman

Summary of Session I . . . . . 459
J. G. Vos, D.V.M., Ph.D.

Summary of Session II . . . . . 461
David Garrett

Summary of Session III . . . . . 461
Ian C. T. Nisbet, Ph.D.

Summary of Session IV . . . . . 462
Donald I. Mount, Ph.D.

Summary of Session V . . . . . 463
Nicholas A. Ashford, Ph.D.

Summary of Session VI . . . . . 465
Christopher M. Timm

Summary of Session VII . . . . . 466
Charles N. Gregg, Jr.

Conference Highlights . . . . . 468
Richard A. Carpenter



MONS 063668

19 November 1975

# OPENING REMARKS

John L. Buckley, Ph.D.*
General Chairman

*Consultant, Office of Research and Development, Environmental Protection Agency, Washington, D.C.



MONS 063669

# OPENING REMARKS

John L. Buckley, Ph.D.*

I'd like to call this meeting to order. I am John Buckley, with the Environmental Protection Agency. I'd like to welcome you here to this National Conference on PCB's, with the subtitle of PCB's in the Environment in 1975.

Most of you in the room are from the United States, but there has been major participation from our Canadian neighbors to the north, and in addition, to my knowledge, representatives from France, Belgium, the Netherlands, and Japan.

I'd like to extend my personal thanks to my many colleagues in the EPA both in Washington and in the regions and in the laboratories, and my colleagues in other Federal agencies, in the industry, and in academia who were helpful in getting this conference organized in the very short period of time we had. I think almost everyone that I talked to and invited and asked to participate has agreed to do so, and I really look forward to the next 2 days as a great opportunity.

As I have gone through the process of helping to arrange the program, many questions have come to mind. Most of these are listed in the program, and I guess my aspiration is that we have some additional insights, perhaps some answers in relation to those questions before we leave.

I think there is a great opportunity for us to learn together and to go forward from here with a better common understanding and perception of the situation in regard to PCB's in the environment.

I'd ask you to remember that we're here to try and assemble and evaluate what we jointly know, and we're here also to avoid conclusions as to what it all means. It doesn't mean we need not reach conclusions, but it does mean it's probably not appropriate to try and tie everything down and understand just where we've been by the end of this meeting.

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MONS 063670

19 November 1975

## KEYNQTE ADDRESS

The Honorable Russell E. Train*

*Administrator, Environmental Protection Agency, Washington, D.C.



MCNS 063671

# ENVIRONMENTAL PROTECTION $R_X$ FOR PUBLIC HEALTH

Russell E. Train*

More than 4 years ago, while I was serving as Chairman of the President's Council on Environmental Quality, a Federal interagency task force began addressing itself to the same basic question that concerns this conference: What do we know and what should we do about polychlorinated biphenyls, or PCB's?

In its report of May 1972, the task force concluded that PCB's were highly persistent, could be found in all parts of the environment, could "bioaccumulate" to relatively high levels in fish, and could have serious adverse effects on human health. The task force recognized, at the same time, that for uses in closed electrical systems, PCB's had some very real advantages over other materials. They conduct heat, but not electricity. The only available substitutes for use in capacitors and in transformers—which are widely used in indoor electrical systems—were flammable. It appeared that to ban PCB's from these uses would be, in effect, to substitute a safety hazard for a health hazard.

The task force, as a result, recommended the discontinuance of all current uses of PCB's except in closed electrical systems. It also called for early enactment of the Toxic Substances Control Act to provide the regulatory authority required not only to deal more effectively with the problems posed by PCB's and other chemicals already in the environment, but to take sensible steps to prevent such chemicals from posing such problems in the first place.

Already in 1972, the sole American producer of PCB's had voluntarily restricted the sales of PCB's to uses in closed electrical systems. Both the Food and Drug Administration and the Environmental Protection Agency announced actions designed to reduce the levels of PCB's in our food and our waters.

The United States asked the Organization for Economic Cooperation and Development (OECD) to take appropriate action, on the international level, to control PCB's. In February 1973, in the first international agreement aimed at limiting the production and use of chemicals in order to protect the environment, the member countries of the OECD announced their decision to prohibit the use of PCB's for industrial or commercial purposes except in certain closed systems. I might add that one member country, Japan, after PCB contamination of rice oil adversely affected 1,000 people, has banned the future production or import of PCB's.

We believed that all these measures added up to an effective, comprehensive program that would "take care" of the PCB problem, and would enable us to continue to take commercial advantage of the unique properties of PCB's while insulating the public and the environment against exposure to hazardous levels of these chemicals.

Instead, more than 3 years later, we find that, although PCB levels in food have steadily declined, PCB's are present in our environment to a far greater degree and at higher levels than we have previously thought. We have found high PCB levels—levels greatly exceeding FDA guidelines—in salmon, striped bass, and other fish in the Great Lakes, the upper Mississippi River, Southern California, the Gulf of Mexico and in the Hudson River and other waterways in New York State. Our selective sampling of drinking water disclosed the presence of PCB's in the water supply of two communities.

The evidence we have accumulated over the past 3 years has underscored our original concern over the toxicity of PCB's and over the potential health hazard posed by the presence of high PCB concentrations in waterways, in water supplies, and in fish. This, in brief, is the situation we find ourselves in today.

We have called this conference to help us deal with it, to determine, as I said at the outset, what we know and what we should do about PCB's.

We do know one thing that we *must* do, that we should have done 3 years ago when the task force urged us to do so, and that, had we done it, might have enabled us to really come to grips with the PCB problem and rendered this conference unnecessary—that is, *to enact an effective toxic substances control law.* I cannot help but recall that when I became the first Chairman of the Council on Environmental Quality in February 1970, my very first directive to our small staff was to develop a legislative proposal for dealing with this class of problem. The time had clearly come for an effective mechanism to deal broadly with such problems, not only after the fact, but also to help prevent their occurrence in the first place.

Almost 5 years have now passed since President Nixon first proposed such legislation to Congress. Over those 5 years we have introduced into the commercial market an estimated 600 chemical compounds annually. We have done so without any systematic, advance assess-

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MONS 063672

ment of their potential impact upon public health. Yet, as we have learned through our experience with such materials as vinyl chloride, we may not discover how harmful a compound can be until years after it has become a rather commonplace item in our everyday lives, even a significant factor in our economy. Also, again and again we find ourselves engaged in an extremely difficult and drawn-out struggle to protect the public from a hazard to which it has already been exposed while at the same time trying to avoid putting people out of business or out of work. We find ourselves trying to choose between a health hazard and a safety hazard. We find ourselves without the authority we need to really cope with the problems posed by PCB's, the authority to limit selected uses and distribution of PCB's as well as to require testing concerning the health and ecological effects of proposed substitutes.

With regard to PCB's, we will continue to address the problem as effectively as we can under existing authorities, especially under the Water Act, while at the same time recognizing the inherent inadequacies of the piecemeal approach we are forced to take. We are also working on measures we would propose under any toxic substances bill that may be enacted. They would take into account, not only the available information on toxicity and exposure levels, but also the impact of any regulatory steps upon business, employment, and the economy. I look forward to the contributions this conference can make to the development of an effective regulatory program for PCB's both under existing authority and under a toxic substances law.

About a month ago, in testimony prepared for delivery before the Environment Subcommittee of the Senate Commerce Committee, Dr. David Rall, who is scheduled to follow me this morning, said, and I quote, "Toxic substances control legislation which prevents the exposure of segments of the population to disease-producing substances is a key element of preventive medicine." There is, indeed, an increasing body of evidence, and an impressive array of expert opinion that we may be approaching the whole question of human health from the wrong side, that, as a matter of national policy as well as of personal practice, an ounce of prevention may well be worth a pound of cure.

The Department of HEW estimates that our total national health bill this year will add up to nearly $120 billion. Yet a good many informed observers believe that, because most of that money goes for cure rather than prevention, we are not getting what we pay for. Our traditional health care system, they say, simply cannot cope with environmentally-induced diseases. Dr. Ernst L. Wynder, president of the American Health Foundation, has pointed out that heart disease, cancer, stroke, and accidents account for 70 percent of deaths among Americans. And the chief causes of these diseases are "environmental" in the broadest sense of that term. "Thus," Dr. Wynder concludes, "in a society where infectious diseases have been largely overcome through sanitary measures, immunization, and antibiotics, the major causes for today's death toll are chronic diseases. This death toll is largely due to unhealthy life style unhealthy working environments and disease-producing products."

The more sophisticated and sensitive our monitoring devices become, and the more data we accumulate on the health effects of pollutants and other agents in the environment, the worse things look. Over a year ago, scientists uncovered disturbing evidence that children, whom we had believed unaffected in any lasting way, can contract chronic and acute disabilities as a result of air pollution. As many as 20 percent of the children in a city such as New York, one study concluded, can develop severe and chronic respiratory diseases. Another study in a southern city with relatively heavy air pollution had similar results. More recently, a group of scientists reported that the most significant factor in a dramatic drop in deaths in the San Francisco area during the gas shortage early last year--a 13.4 percent decrease in deaths compared with the same period over the previous 4 years--was reduced exposure to pollutants from auto exhausts.

We are spending around $1 billion this year on research into cures and causes of cancer. The National Cancer Institute has estimated that the actual cost of cancer to people amounts to tens of billions of dollars a year. Yet the World Health Organization estimates that from 60 to 90 percent of all cancer is the result of "environmental" factors, again, in the broadest sense of that term. We have all read the news stories recently concerning the 1975 Nobel award to three American scientists for research into possible links between viruses and cancer. I was struck by the fact that, in their first public statements upon receiving the award, two of these scientists stressed the fact that, in the words of one of them, Dr. David Baltimore of the Massachusetts Institute of Technology, "the role of viruses in cancer is small" and that " the best hope today for cures is research into environmental causes of cancer." "This," Dr. Baltimore went on to say, "is a good place to put funds now."

We should understand, as well, that while environmental protection often appears to involve substantial costs, we really have no choice about whether or not we are going to bear these costs. Society has already been bearing these costs in one form or another--in the loss of recreational uses of rivers and beaches; in the increased treatment costs of our drinking water; in the damage



MONS 063673

from air pollution to buildings, farm crops, and forests; and most importantly, through medical and hospital bills, time lost on the job because of illness, human suffering, earlier mortality, and the like. When we control and cut pollution at the *source*, we are shifting its costs from the shoulders of society as a whole onto those of the polluter, where they belong in the first place. Such costs then tend to be passed on to the polluter's customers. But this is the most efficient way of allocating these costs and of encouraging, at the same time, the development of both processes and practices that generate less pollution. Moreover, all our experience indicates that the cost of the particular pollution to society as a whole is usually far greater than the cost of cleanup and control. We estimate, for example, that measurable annual damages of $11.2 billion from particulates and sulfur oxide are more than twice the annual costs of control.

What all of this suggests to a layman such as myself is that both our popular understanding of, and our public approach to, health care and disease control are going to have to undergo a searching reexamination and, I suspect, radical revision. It suggests that, some of our most effective "health care" dollars, at least when they are well spent, may be the "disease prevention" dollars we spend to curb and control pollution and other agents that we introduce into our own environment. It suggests that the battle against disease must increasingly be fought, not simply in the hospitals and the doctors' offices, but in our streets and our homes and our offices, in our air and our water, in our food and our products, in our personal habits and lifestyles. It suggests that if, in the words of Dr. Irving Selikoff of the Mount Sinai School of Medicine in New York, "environmental disease is becoming the disease of the century," then environmental protection, in the broadest sense of the phrase, must become the most important ingredient in any national health program.

Such a broad prescription may seem far removed from the more immediate and urgent concerns of this conference. But I think we all understand that it is our failure to get at the real roots of the problem that concerns us here, and our preoccupation instead with the symptoms and surfaces and single instances of things that has made this conference and the problem it addresses so critical.

At the start of my remarks, I successfully resisted the temptation to issue the dramatic announcement that this was my last PCB's conference. It is, however, my fervent hope that you do your work so well at this conference that we will never need to call another one. I thank you for coming, and I look forward to seeing the results of your work.



MONS 063674