Transactions of the

TWENTY-FIFTH ANNUAL MEETING

OF THE

AMERICAN CONFERENCE

OF

GOVERNMENTAL INDUSTRIAL HYGIENISTS

25th Anniversary Edition

CINCINNATI, OHIO

May 6-10, 1963

TABLE OF CONTENTS

	Page
Annual Meetings and Officers	1
Executive Committee 1963-1964	2
1964 Conference Committees	3
Committees 1963-1964	3

GENERAL SESSION - 9:00 A.M., May 6, 1963

What Makes A Governmental Industrial Hygienist's Job Different From A Non-Governmental Job of the Same Discipline and Training? Leonard J. Goldwater, M.D.	8
Discussion on Above Paper. Grant S. Winn, Ph.D.	8
Detection and Control of Health Hazards in Research, Development and Production. Col. Edward J. Dehne	10
Advisory Committees: Their Constitution and Services to Governmental Occupational Health Agencies. Lester M. Petrie, M.D.	14
Discussion on Above Paper. Jack C. Rogers	19

GENERAL SESSION - 2:00 P.M., May 6, 1963

Summary of PHS Silicosis Study. Henry N. Doyle and Robert H. Flinn, M.D.	24

JOINT SESSION WITH AMERICAN INDUSTRIAL HYGIENE ASSOCIATION AND SOCIETY OF TOXICOLOGY.

May 7, 1963

International Threshold Limits, Their Bases and Significance 1963 Herbert E. Stokinger, Ph.D.	25
Comments on Above Paper W. Clark Cooper, M.D.	39

BUSINESS SESSION - 11:00 A.M., May 6, 1963

Appointment of Resolutions Committee	44
Report of Secretary-Treasurer	44
Report of Executive Committee	51
Appointment of Committees 1963-64	3

TABLE OF CONTENTS
(Continued)

	Page
Report of Standing Committees	
Agricultural Health	53
Air Pollution	61
Air Pollution Process Flow Sheets for Asbestos - Appendix A	
Air Sampling Instruments	62
Awards	64
Constitution and By-Laws	65
Evaluation of Dust Exposure and Effects Upon Exposed Workers	66
Industrial Hygiene Codes and Regulations	67
Guide for Uniform Industrial Hygiene Codes or Regulations for Coin-Operated Dry Cleaning Establishments	99
Industrial Hygiene Records and Reports	68
Industrial Ventilation	69
Ionizing Radiation	72
Membership Screening	74
Recommended Analytical Methods	75
Standard Labeling Procedures	76
Threshold Limit Values	77
Trade Names Index	80
Ad Hoc - Legislation	81
Ad Hoc - Minimal Standards for On-the-Job Medical Services	82
Joint AIHA-ACGIH - Qualifications for Industrial Hygiene Personnel	82
Joint AIHA-ACGIH - Respiratory Protective Devices	83
Adjournment	87
BUSINESS SESSION - 11:00 A.M., May 7, 1963	
Summary of Round Table Discussions	
Chemistry - Mr. Robert G. Keenan	88
Engineering - Mr. George Hama	89
Interdisciplinary Group - Dr. Edwin G. Williams	91
Nursing - Miss Mary Louise Brown	92
Report of the Resolutions Committee	94
Resolution No:	
1. To 1963 Conference Chairmen	94
2. In Memoriam to Dr. John M. McDonald	95
3. To Dr. Fred Goldman	95
Adjournment	98

TABLE OF CONTENTS
(Continued)

	Page
Guide for Uniform Industrial Hygiene Codes or Regulations for Coin-Operated Dry Cleaning Establishments	99
Highlights of Silver Jubilee Banquet	103
Flow Diagram for Milling of Asbestos Ores	108

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

TWENTY-FIFTH ANNUAL MEETING

May 5-7, 1963

Cincinnati, Ohio

May 5, 1963: Meeting of Executive Committee

May 6, 1963: Two general sessions and one business session. The afternoon general session was held at the Occupational Health Research and Training Facility, U.S. Public Health Service, 1014 Broadway.

May 7, 1963: Roundtable discussions, one business session, and joint session with American Industrial Hygiene Association and the Society of Toxicology. A.C.G.I.H. Silver Anniversary Banquet and Program.

ANNUAL MEETINGS AND OFFICERS

Annual Meetings			Chairman	Secretary-Treasurer
No.	Date	Place		
1	June 27-28,1938	Washington, D.C.	A.S. Gray, M.D.	J.J.Bloomfield
2	Apr. 26-28,1939	Washington, D.C.	W.S. Johnson	J.J.Bloomfield
3	Apr. 30-May 2,1940	Bethesda, Md.	M.H. Kronenberg,M.D.	J.J.Bloomfield
4	Feb. 17-18,1941	Washington, D.C.	C.L. Pool	J.J.Bloomfield
5	Apr. 9-10, 1942	Washington, D.C.	C.A. Nau, M.D.	J.J.Bloomfield
6	May 24, 1943	Rochester, N.Y.	M.F. Trice	J.J.Bloomfield
7	May 9, 1944	St. Louis, Mo.	P.A. Brehm, M.D.	J.J.Bloomfield
8	Apr. 7-13, 1946	Chicago, Ill.	P.A. Brehm, M.D.	J.J.Bloomfield
9	Apr. 26-29, 1947	Buffalo, N.Y.	K.M. Morse	J.J.Bloomfield
10	Mar. 27-30,1948	Boston, Mass.	L.W. Spolyar, M.D.	J.J.Bloomfield
11	Apr. 2-5, 1949	Detroit, Mich.	H.G. Dyktor	J.J.Bloomfield
12	Apr.22-25, 1950	Chicago, Ill.	K.E. Markuson, M.D.	L.J.Cralley
13	Apr. 21-25, 1951	Atlantic City,N.J.	J.J. Bloomfield	J.E.Flanagan, Jr.
14	Apr. 19-22, 1952	Cincinnati, O.	L.M. Petrie, M.D.	J.E.Flanagan, Jr.
15	Apr. 18-21, 1953	Los Angeles, Cal.	J.C. Soet	J.E.Flanagan, Jr.
16	Apr. 24-27, 1954	Chicago, Ill.	J. Shilen, M.D.	J.E.Flanagan, Jr.
17	Apr. 23-26, 1955	Buffalo, N.Y.	H.B. Ashe	J.E.Flanagan, Jr.
18	Apr. 21-24, 1956	Philadelphia, Pa.	R.R. Sullivan, M.D.	C.D. Yaffe
19	Apr. 20-23, 1957	St. Louis, Mo.	W.G. Fredrick, D.Sc.	C.D. Yaffe
20	Apr. 19-22, 1958	Atlantic City,N.J.	T.F. Mancuso, M.D.	C.D. Yaffe
21	Apr. 25-28, 1959	Chicago, Ill.	C.E. Couchman	C.D. Yaffe
22	Apr. 23-26, 1960	Rochester, N.Y.	A.L. Coleman	C.D. Yaffe
23	Apr. 9-12, 1961	Detroit, Mich.	A.L. Coleman	C.D. Yaffe
24	May 12-15, 1962	Washington, D.C.	W.L. Wilson, M.D.	A.D. Hosey
25	May 5-7, 1963	Cincinnati, O.	E.L. Schall	A.D. Hosey

Note: No meeting held in 1945.

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June 1963

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52	Dr. Grant S. Winn, Utah Dept. of Health	'63
52		
53		

Recommended Analytical Methods

52	Mr. John L. Monkman, Dept. of Nat'l. Health & Welfare, Ontario, Chairman	'62
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52		
53		
53		
52		

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Trade Names Index

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ASTM D-26 - Mr. Howard Kusnetz (halogenated organic solvents)

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Mr. Robert G. Keenan

GENERAL SESSION

May 6, 1963 - 9:00 A.M.

E. Lynn Schall, Chairman, Presiding

WHAT MAKES A GOVERNMENTAL INDUSTRIAL HYGIENIST'S JOB DIFFERENT FROM A NON-GOVERNMENTAL JOB OF THE SAME DISCIPLINE AND TRAINING?

Leonard J. Goldwater, M.D.
Professor of Occupational Medicine
Columbia University School of Public Health
New York

(Note: Dr. Goldwater presented an extemporaneous discussion on the above subject and therefore did not have a formal paper for inclusion in the Transactions.)

The following is a discussion on the above subject by Grant S. Winn, Ph.D., Head, Industrial Hygiene Section, Utah Department of Health, Salt Lake City, Utah:

For the purpose of this discussion, industrial hygienists are arbitrarily divided into two general groups: (a) governmental and academic, (b) those employed by industry, insurance companies, and consultants.

All of these Occupational Health people have the same objective; to prevent untoward effects from environmental factors. However, the pressures, basic philosophy and methods of approach may differ widely in two groups as illustrated:

1. Non-governmental industrial hygienists are employed by management to keep the company out of trouble; usually their reports are confidential. Management, at its own discretion, may or may not act on the recommendations made.

   The governmental industrial hygienist is, essentially, employed by the people to protect the people. His reports are public information. In many cases he can enforce his recommendations, practical or not. This sometimes leads to startling results: in one area, manufacturing plants were classified for air pollution potential by counting the number of stacks: A recommendation was made that a flat roof on a building be changed to a monitor roof to reduce the exposure of six crane operators to sulfur dioxide - this, despite the fact that the building in question was a half mile long and the cost involved would be several millions of dollars.

2. Non-governmental industrial hygienists are employed by hard-headed business men whose primary purpose is to make money. Thus, the dream (seldom realized) of these industrial hygienists is to find a means of reducing or removing a hazard - at a profit.

   Governmental industrial hygienists are responsible to politicians who are influenced by public opinion which varies from complete apathy to unreasoning hysteria. For him, the press can be a highly potent influence. However,

neither the press, the politician nor the people are ordinarily in a position to adequately assess his work. For this reason, the governmental industrial hygienist can, and unfortunately sometimes does, embark on elaborate studies to collect data which are interesting but of little practical value.

3. Management, historically tends toward the attitude "let's wait until it is evident that a hazard exists before we institute control measures."

   Government, on the other hand, leans toward the attitude that all potential hazards should be eliminated before any untoward effects occur.

4. Management is well acquainted with practical means of efficient operation of equipment, therefore "Industrial" industrial hygienists are more apt to encounter sympathetic ears to reasonable requests. Politicians, on the other hand, are not as used to equipment management. The results are sometimes amazing, i.e., they will approve fabulous amounts of money for expensive equipment, then flatly refuse to approve enough for personnel competent to operate the equipment.

5. The non-governmental hygienist usually sets up a program which becomes largely routine with occasional emergencies arising.

   In the governmental job, practically everything is done on an emergency basis - everything involves a crisis.

6. The non-governmental hygienist tends to become an efficient expert in a more or less limited field.

   The governmental man is a "jack-of-all trades" and must become a reasonable master of every field. He might develop ulcers and suffer severely from frustration, but, if he is worth his salt, he will never be bored in his job.

SUMMARY

	Non-Governmental	Governmental
1.	Reports - confidential, management may act or not.	Reports - public information, can be enforced, practical or not.
2.	Cost and practicalities govern applications.	Impractical and theoretical investigations possible.
3.	"Wait until trouble develops" attitude.	"Eliminate potential hazards before they develop" attitude.
4.	More likely to get balanced operating system.	Can end up with adequate equipment and inadequate personnel or vice versa.
5.	More routine - occasional emergency.	Almost everything an emergency.
6.	Efficient expert, limited field.	Jack-of-all trades.

* * * * * * * * * * * * * * * *

DETECTION AND CONTROL OF HEALTH HAZARDS IN RESEARCH, DEVELOPMENT AND PRODUCTION

Col. Edward J. Dehne, Director
Department of Preventive Medicine
Fort Sam Houston, Texas

The Army is engaged in introducing new and improved equipment, material and weapons systems involving vastly advanced versions of military supplies to maintain the Nation's defense. Improvements and alterations in the health service of the Army have kept pace with these advances in weapons systems in order that the health service will parallel the strategic, tactical, and logistical structure of the Army in its management of two fundamental components -- men and weapons. The medical service plays its principal role in that phase of management which concerns the man--that is, the individual soldier. The Army Medical Service contributes to medical progress by identifying potential health hazards during the various phases of research, development, and production of Army equipment and material. The health service experience in peace and war enriches medical knowledge in this field, as well as other fields, and contributes to the conservation of manpower and promotion of health.

The Army's approach to the management of health and medical problems arising out of the development and growth of the weapons industry provides another noteworthy example of the successful application of epidemiological principles to new technological endeavors.

A salient feature of the occupational health service is the advice and health guidance provided the various staffs and commands at the plants and activities that make up our military communities. To be in a position to furnish this health guidance, the respective health services must keep abreast of all work and production activities so that current and periodic evaluation of such activities from the standpoint of potential health hazards can be made. At the local level, the health service provides pre-employment and preplacement medical examinations as an important part of proper job placement. In evaluating the potential health hazards--biological, chemical, radiological, and physical--medical attention is given to the worker and the work environment involved in the research, development, production, maintenance, handling, storage, and end-use of all items and material of the Army. Personnel engaged in potentially hazardous work activities receive special periodic medical examinations designed to detect any early manifestations of occupational disease. This medical surveillance of people in relation to their work, although new in its application to weapons systems, is old in Army procedures. To be effective, it must be closely correlated with a realistic knowledge of the work environment conditions.

The health service operates three systems: one for the identification of medical factors related to selection and assignment of personnel; another for the prevention of disease and promotion of health through the provision of safe and hygienic environmental work and training conditions and proper protective measures; and a third for provision of facilities and services for the diagnosis, treatment, and rehabilitation of personnel. The primary health objective of the Army is maintenance and promotion of the health of personnel. The great advancements of knowledge in the medical field, as well as in scientific fields closely allied to medicine, lead us to recognize and administer these three broad categories of service. In one, emphasis is placed on selection and fitting the man to the job; the second deals with prevention; and the third is devoted to diagnosis, treatment, rehabilitation, and epidemiology.

The influence of the Army's health service program begins with the introduction of the soldier to the service or the employee to his job. Medical standards are adhered to in selection; stress is placed on assuring physical capability of performing the assigned job; resistance to disease is built up through procedures, immunizations, seasoning, good nutrition, and health education; and periodic surveillance is maintained throughout with a view toward recognizing and preventing the development of disease or retarding it in its earliest stages. These features have been operative in the Army's work with older as well as with the many new and experimental weapons and categories of equipment.

The contemporary soldier is a technician as well as a disciplined soldier in the traditional sense with varied methods and disciplines of work. He must be prepared to handle and operate the technological items under adverse environmental and combat conditions, often without the protection of industrial protective devices; yet, at the same time he must be proficient in more primitive forms of combat.

The Army's program in a typical industrialized, mechanized community embraces all of the work environment considerations emphasized by modern industry or health departments. The overall program serves nearly a million military personnel and a third that many civilian employees engaged in nearly every classification of industrial work activity encompassing numerous different potential health hazards that occur in the phases of research, development, production, manufacture, storage, transport, and end-use of military weapons, equipment, and material.

Safety and health hazard experiences gained during the preliminary steps of research are utilized in refining protective measures in the subsequent phases of research and development of an item or the compatibility of chemicals or ingredients. In sequence, the same knowledge is utilized in protective and health measures in the subsequent steps of production, manufacture, storage, and final use of an item or a weapon.

The program, administered through the medical services at the local level, is supplemented by health service and special guidance from the staff of the major regions into which the United States Army is subdivided. Each of these major regions has a staff of specialists in preventive and occupational medicine as well as a public health type medical and investigative laboratory. The regional headquarters can obtain further assistance from specialists in medicine and in the medical sciences and disciplines allied to preventive and occupational medicine, if required.

Overall health service guidance is provided by the Surgeon General of the Army to the regional armies and the overseas Army commands. Certain special service and research laboratories and agencies of the Army furnish personnel trained in the various fields of preventive medicine and occupational health, industrial hygiene, and radiological hygiene. Investigative and consultive services from these sources supplement those available at the regional and local levels.

Supervision and guidance are provided by the local medical service. This is supplemented by annual inspections and surveys by disinterested environmental health survey teams of the United States Army Environmental Hygiene Agency. Surveys are made to assure local competence and adherence to prescribed procedures and to detect hazards which might otherwise be overlooked. A complete inventory of operations, potential hazards related to each and controls used is compiled for future reference and inspection.

The environmental health survey system, extensively developed in recent years, provides for teams which survey the environment of installations, evaluate the qualifications of supervisory and other employees to ascertain their competence and to determine whether workers are trained and equipped to protect themselves and avoid incidental injury to their co-workers. A battery of direct reading industrial hygiene instruments is used in an environmental hygiene survey to measure the work and training environment conditions for presence of atmospheric contaminants or other environmental hazards.

At the installation, action is taken in the plant or military community to correct the inadequacies found in surveys. The worker is protected through use of protective clothing, respirators, and other devices. Defects uncovered are usually amenable to engineering controls and the main effort is to eliminate or minimize occupational health hazards in this matter. As an additional check on adequacy of preventive measures for individuals who in their work accept certain potentially hazardous exposures these workers are kept under medical surveillance to detect any adverse effects at the earliest possible time.

Special industrial hygiene engineering design consultive services are utilized in the fields of ventilation, lighting, heating, atmospheric conditions, and noise abatement, as they relate to the various phases of weapons design and development. Advice and assistance for the design or modification of equipment to control health hazards or improve efficiency are given in the earliest phase practicable.

In research, development and production activities in the weapons and equipment industry, there have been many potential exposures to ionizing radiation due to the extensive use of techniques involving radioactive material. Radiation protection surveys are made and advice is furnished on the internal and external hazards of all types of ionizing radiation and their effects. Guidance and instructions are disseminated on methods to be used in protecting personnel. The radiologic hygiene program is aimed toward protecting personnel working with the numerous industrial radioisotopes used in many Army installations, the high voltage industrial X-rays and the betatrons operated at Army installations, as well as the personnel operating Army Medical Service X-ray facilities used in diagnosis and therapy and those working on power reactors and problems associated with nuclear weapons. Applications for radiation material are reviewed and the applicants' qualifications evaluated to determine their ability to handle radioactive material without harming themselves or others and to ascertain the adequacy of protective equipment and barriers for the safe receipt, handling, storage, and disposal of radioactive materials.

Epidemiological and sanitary engineering surveys and investigative studies are carried out in relation to water supplies, sewage disposal, food sanitation, housing, and stream and atmospheric pollution at facilities engaged in research and development projects. Special attention is given to industrial waste disposal and to the disposal of radioactive waste at Army installations where research development and production work indicate it.

The health problems originating from research, development, production, storage, maintenance, testing, repair, transportation, and end-use of weapons and material have ranged from control of intermittent exposures to extremely

toxic chemicals and hazardous ionizing radiation materials to the disposal of sewage and insect control at remote sites. Solutions to these problems have varied from traditional sanitation, hygiene, and personal protection methods to development of new instruments and protective equipment.

In a large measure, the success of the Army health service program has been dependent upon early information and experience gained while protecting the health of those who conduct research or work on the testing and development of concepts and ideas in the rapidly changing weapons systems, as well as on the application of these principles to workers in the later phases of production, manufacture, and end-use of the items. The broad and varied nature of these activities has demanded the efficient use of many disciplines allied to medicine and health to provide effective protection. Our progress in the health field is attributed to constructive participation by specialties of medicine, as well as the many sciences and disciplines allied to medicine and health. None of these sciences stands alone. The health hazards encountered in research, development, testing, and employment of Army weapons and materials are both old and new.

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ADVISORY COMMITTEES: THEIR CONSTITUTION AND SERVICES TO GOVERNMENTAL OCCUPATIONAL HEALTH AGENCIES

Lester M. Petrie, M.D., M.P.H.
Director, Preventable Diseases Branch
Atlanta Department of Public Health

Mr. Chairman, Distinguished Guests, Ladies and Gentlemen:

Thank you for honoring me with this assignment, for it has given me the privilege and pleasure of meeting again with the American Conference of Governmental Industrial Hygienists. I have given many of the best years of my life to promoting the objectives of this organization. The first time I met with you was in 1942 and I recollect missing only one annual meeting from that time on through 1958. In later years my friend and colleague, Dr. Karl Sessions, has represented my state in my place, but I have maintained my membership, and my heart and spirit are always with you. Although Occupational Health is one of a number of State Health Programs now assigned to me I feel that none is more important--if we are to successfully cope with the challenge of the future, we cannot afford to ignore the occupational health approach because it deals with those who produce the wealth which we need, and who represent the population which we serve.

My assignment is to discuss advisory committees to Governmental Occupational Health Agencies as to (1) their constitution and (2) their services. Rather than to impose my preconceived notions on you I decided to try to obtain and abstract a consensus of those of you who have used such committees. With a full recognition of the very definite limitations inherent in questionnaires I nevertheless prepared a rather crude and perhaps somewhat poorly constructed one which I circulated to 175 persons whose names were available to me through the Directory of Governmental Industrial Hygiene Personnel, and who I thought might shed some light on the subject. Eighty-five of the 175 questionnaires were returned. This is 49%, or almost half--which is exceptionally good.

The questionnaire was designed around four major queries with a fifth item for remarks. The questions were:

1) Have you used advisory committees?

2) Have you found these generally useful?

3) In what way have you used them. (This was to determine their service)?

4) In your opinion, who should serve on advisory committees? (This was to determine their constitution--but unfortunately through typographical omission the question itself was not stated. All that appeared on the questionnaire was a listing of potential candidates, such as employees of your own agency, employees of other governmental agencies, outside professionals, university staff members, voluntary agencies, and others, to assist you in your response.

Forty-seven (55% of the 85 who replied) (27% of the 175 queried) have used advisory committees. Forty-three or 91% of these found them generally useful. Only two--less than 5%--answered "no" they were not generally useful. One person reported excellent results with one committee but difficulties with another. (Incidentally, three respondents who by their own admission had not used advisory committees answered "no," they had not found them generally useful. We will conclude that these three had perhaps served on an advisory committee and were in the category of "used" rather than that of the "user." Until one has used advisory committees one really can have little concept of just how much they may help.) Both of the two dissenters who had used advisory committees but had not found them generally useful had comments. One said, "Our advisory committee was formed in the late fall of 1952 and died a natural death in the Spring of 1963, probably due to lack of program and direction and pressure of other business. It was composed mostly of industrial medical directors from large corporations." The other dissenter commented, "While I believe that advisory committees can under ideal conditions provide valuable advice, I also believe that careful selection of members, inspired guidance and wise usage of such committees requires much effort which on a sustained basis may be more trouble than they are worth. Our experience has been too meagre to be highly indicative." Both of these comments indicate that advisory committees might be successful under altered circumstances.

Twenty of the 38 respondents who reported not using advisory committees submitted interesting comments. Nine of them reported experience with advisory groups in other or related fields, but not with formal committees in Occupational Health. Six reported using consultants but not organized as formal committees. Five have never used advisory committees but contemplate doing so or believe a committee would be useful. Let me quote from a typical reply, "There are no committees, as such, which function specifically as advisory to this bureau. On the other hand, I or staff members, have weekly contacts with community groups, associations, societies, or committees which exist to promote activities and to formulate programs of community interest or develop attitudes in various fields of occupational health as well as related fields of public health. . . . These contacts are valuable. . . . Advice is usually no farther than the telephone. . . . Long range planning, it is conceivable, may require a specific informal meeting of a few individuals, at which time several hours may be spent on specific study of new aotivities, and these individuals may be drawn from outside a given organization. No more formalized arrangements would seem necessary at this time."

In what way have you used advisory committees?

In descending order of frequency, most of the replies (87%) reported use in an advisory capacity, but several of you asked "are not all advisory committees advisory by definition?" I do not know how to account for the six of you who have used advisory committees but not in an advisory capacity.

Seventy-nine percent have used them in specific projects. I had expected such a high response to use in specific projects, since the most successful committees I have had experience with have been ad hoc usually multidisciplinary committees with a specific assignment who meet, work at their task with decisive thinking, prepare their report, make their recommendations, and disband.

Generally official agencies receive strong backing from such advisory groups as well as continued support from the individuals who participated in the group. Likewise, private enterprise accepts proposals more readily when they have had a part in the formulations.

I was surprised at the relatively high percentage (59%) who have used advisory committees for program implementation. My own most glaring failures have occurred in this kind of usage. Your replies have helped me to reorient some of my own thinking. One individual summarized his usage for program implementation as follows:

"(1) Have used Industrial Committee of the Medical Association to help install examinations in industry.

"(2) The State Chapter of the American Society of Safety Engineers have been helpful in promoting Industrial Hygiene and also implementing certain recommendations.

"(3) Our Division of Health Education has been helpful in preparing educational material.

"(4) The Tuberculosis Society has assisted individuals in industry with TB."

Another state reports one assignment accepted by its State Advisory Committee is the responsibility of planning the annual Governor's Safety Conference. Several states have reported program implementation by advisory committees in such modern fields as radiation control or air pollution. May I quote from one: "In preparation of regulations pertaining to radiation and more recently to pest control operators, we have found advisory committees to be very helpful in preparation of acceptable regulations, acceptance of the regulation by those it is designed to regulate, and in the actual implementation procedures." (Underlining is mine.)

Another individual, however, who reportedly used committees for program implementation made the perhaps paradoxical statement that "as long as committee remains advisory we have found such groups of inestimable value in all the categories. Ofttimes whether you use the committee or not depends on their probable interest in your problem and the calibre of the information they are prepared to share with you."

A deficiency in the questionnaire was its failure to bring out the relative merits of single discipline advisory committees versus multiple discipline committees. I think both have their places, especially if the member representing his profession on a multidiscipline group is also a member of the similar committee restricted to his own profession. This serves to protect the best interests of each profession as well as to broaden the viewpoint to an understanding of the overriding importance of the total community. Each discipline needs to modify its own peculiar preconceived selfish interests, by adapting to the greatest good for the greatest number. By losing oneself in the multiple facets of our common problems elucidated by a multidisciplinary study one really finds the proper place for himself and his own profession in the whole scheme of things. This lesson he can carry back to his own professional group.

A committee should be created only when there is a job to be done which can be done better by having a group of people get together and do it or let it be done under the influence of the group thinking. Nothing is more important to successful committee functioning than the selection of its membership. Choosing the right people to work on a problem is proof of leadership. Each member must be a recognized responsible authority in his program area but with an open mind. Avoid extremists, either ultraconservative or ultraliberal. The former tends to glorify past accomplishments and by complacent conservatism block the progress of new ideas. The ultraliberal may drive the new ideas forward too furiously as to result in a wreck. Some one has defined the ultraconservative committee as one which keeps minutes and wastes hours. On the other hand a lifetime of hours are not wasted if progress of sound ideas is achieved.

I hope you will pardon personal references, for I will now attempt to illustrate some of the points with an example of success and failure in my own experience. It has to do with developing the benefits of occupational health for governmental employees in my state, and a similar program for private enterprise employees. At the state level, aside from the Federal Government, there are few if any groups of employees who outnumber the employees of the state itself. Likewise, within the area of jurisdiction of any local health department, there are few, if any, groups of employees outnumbering the employees of the local governments. Included in this category are, among others, the employees of the local departments of health and education. I doubt that there are more than a very few, if any, local health jurisdictions anywhere in our country that do not have several thousand or more local government employees within their geographical area, groups large enough to make a full-time employee health service economically feasible.

Some time prior to 1954 Georgia created a joint Health and Education Advisory Committee. In 1954 we secured from this joint committee the resolution that the Committee:

> "stimulate the formation of a special committee representing the Medical Association of Georgia, the Georgia Dental Association, and related organizations to determine a battery of suitable health-screening tests which could be established as a periodic health appraisal for all personnel employed in the school system of Georgia. It is suggested that every employee detected through the screening tests as a suspect of incipient or advanced disease be urged to have a physical examination by a physician licensed to practice medicine."

The Joint Committee requested me to work with a subcommittee on this assignment, as their contact with the professional associations. In an effort to select the best professional people I consulted individually with recognized professional leaders in internal medicine, orthopedics, pediatrics, otology, and opthalmology, as well as dentistry in the Greater Atlanta Area. I selected doctors possessing vision and open minds, and secured their agreement to serve if formally requested by their organizations to do so. In order to avoid any appearance of domination of a state-wide program by metropolitan leadership, I asked each one to secure the same cooperation from a colleague practicing outside the metropolitan area. When all these understandings had been

cleared I wrote to the executive secretaries of each professional State association. In my letters I quoted the resolution of the Joint Committee, and requested the association to:

> "Appoint for the Advisory Committee medical, (dental) members qualified to specify the recommended tests, whose duty shall be to guide all professional and ethical decisions. Such a committee would serve the Health and Education Departments in developing their Health Program in a manner similar to services rendered by the Industrial Health Council of Greater Atlanta by its medical policy committee approved by the Fulton County Medical Society. We would like to request that the committee include qualified representatives of the ophthalmologists, otologists, pediatricians, orthopedists, and internists approved by the medical profession as well as dentists approved by the dental association.
>
> "I would like to suggest the following names of physicians for your consideration . . ."

And, I named the metropolitan and other persons in each specialty already referred to.

The committee was organized without any exceptions to my request. The professional committee met, endorsed the resolution of the Joint Committee, and prepared a report and recommendations which included a battery of tests and the statement that,

> "the above are tests that may be done by lay personnel or technicians. Let it be stated again--these are tests to be done to augment and not to supplant a complete physical examination by an M.D."

The medical committee report was approved by the House of Delegates of the Medical Association of Georgia in 1957 and was published in its Journal, June 1957, p. 268-269. Likewise, the Dental Association approved its report.

Now, as to the success and failure of this committee report. As one result of their approval a battery of approved health tests is offered annually to all employees of our State Governmentl through the Georgia State Employees' Health Service. The failure occurred in private enterprise. The similar battery of approved tests was offered, but without the support of tax funds, to private enterprise employees through the Industrial Health Council of Greater Atlanta, Inc., under the direction of a miltidiscipline Board and with the guidance of a medical advisory board appointed by the Board of Trustees of the County Medical Society. The Industrial Health Council Program was a good program, but it failed because of insufficient business and professional support.

In conclusion, it is reasonable to estimate that between a quarter and a half of the governmental occupational health administrators use advisory committees and that over 90% of those using them have found them generally useful.

A major purpose of an advisory committee is to furnish a proposed program with an overview of diversified but informed opinions that may be brought to bear

either in its favor or adversely. By sane and friendly discussion of the key factors the alert individual can in large manner predicate success, possible success or failure. The advantage of this procedure is that a problem can be viewed objectively by a group of sufficiently expert individuals.

An advisory committee is not a device intended to reduce or eliminate individual responsibility in either program planning or program implementation, and it should not be made the scapegoat for one's own inefficiency or indolence.

It is the author's opinion that the most generally successful advisory committees are the ad hoc committees of experts, who accept a defined assignment, meet and work at it with decisive thinking, prepare their report, and submit their recommendations to the administrators. Both single-discipline and multi-discipline committees have their place.

DISCUSSION ON DR. PETRIE'S PAPER
by

Jack C. Rogers, Director
Division of Occupational and Radiological Health
Los Angeles City Health Department

It was gratifying to see the active response to Dr. Petrie's questionnaire to 175 persons wherein 49% surveyed gave some response. It is indicative that there is much interest in the use of advisory committees and the manner in which such committees may be utilized by governmental occupational health agencies. I found his comments very interesting in the light of our experience in Los Angeles with occupational health advisory committees especially as it is related to two of the items. One, is the difference between the use of multi-disciplinary committees and the use of single-disciplinary committees. It is of real interest to see the results of the questionnaire wherein the use of multi-disciplinary committees provided for a better exchange of information for an ad hoc committee than did a single-disciplinary committee. In the City of Los Angeles we have used both types of committees depending upon the program and purpose of the committee. For example, in the development of special activity programs such as resolving of ventilation problems, we have used a single purpose committee of ventilation engineers to assist our Department. On the other hand a multi-disciplinary committee provides for a check and balance system in the action of an advisory committee in that not one discipline or no one interest group may overbalance the committee actions. This has been evident in the activity of our Radiological Health Advisory Committee wherein doctors, dentists, health physicists, equipment manufacturers, all of the disciplines associated with the use of ionizing radiation were associated in the development of both our ordinance and rules and regulations on the control of ionizing radiation.

I think it significant that another item contained in Dr. Petrie's report was the need for a "specific purpose" for a committee to work on. Not only is a specific purpose necessary for the committee's activity, but a proper selection of membership on this committee is quite important. I repeat Dr. Petrie's last paragraph wherein he stated, and I quote, "It is the author's (Dr. Petrie) opinion that the most generally successful advisory committees are the ad hoc committees of

experts, who accept a defined assignment, meet and work at it with decisive thinking, prepare their report, and submit their recommendations to the administrators. Both single-discipline and multi-discipline committees have their place." With this I am in full agreement except that I would like to carry Dr. Petrie's remarks a little further and state that once these reports are made and submitted to the administrators for necessary action, I feel it desirable that these committees stay on and not be considered only as an ad hoc committee. Because not only is program development necessary, but periodic review of programs become essential to the future operating program of a governmental agency.

Mr. Charles L. Senn, Director of our Environmental Health Program, in the City of Los Angeles, gave a paper a year ago to the Environmental and Sanitation Section Program of the 90th Annual Meeting of the APHA on the subject, "Use and Abuse of Advisory Committees in Environmental Health Programs," and I quote from his opening remarks. The Program Committee's title, "The Use and Abuse of Advisory Committees," brings out the first fundamental to observe in working with environmental health advisory committees. These committees should not be "used" or "abused." They function most enthusiastically when their advice is sincerely sought and their views are given full consideration. Environmental Health advisory committee members are important people, willing to contribute time and effort to advancement or improvement of their own professional, business, or labor programs and are interested in public service. They want to help, to contribute, to advise. They will quickly recognize and resist any attempts to use them and would not long tolerate "abuse."

It has been my experience that business and labor leaders, as well as professional groups, who participate in advisory committees soon recognize that good environmental health practices are "good business." On the other hand, the ulilization of business, professional, trade association executives or labor leaders will soon find that their time is too occupied to afford to continue attending meetings that are not well-planned or organized. The development of programs by an official governmental agency is necessary in advance of meetings with advisory committees. No meeting should be called until most of the following steps have been taken:

"1. Specific, necessary, and important topics are scheduled for consideration.

2. Department staff specialists have made investigations to get all available facts on those topics.

3. Data and proposals are summarized in writing and sent to all participants before the meeting.

4. Personal conferences are had with leaders in each field so those invited to participate are "official spokesmen" of representative groups, societies, or organizations.

5. Committee appointments should be made by formal letter from the Health Officer, Board of Health Commissioners, Mayor, or other top official.

6. Committees should provide for the selection of their own chairman and vice-chairman who would be responsible for the conduct of the meetings, with staff assistance from the health department.

7. Exhibits should be brought to meetings whenever they aid in presentations or discussions.

8. Subcommittees are organized for consideration, in depth, of technical matters; to try out proposals in actual practice; to bring in technical and specialist advisors; and, to avoid the necessity of all committee members being involved with details in which only a portion of the committee share interest.

9. Committee members should be encouraged to review proposals with the group they represent before being asked to give final approval of items affecting those groups.

10. Presentations are made by committee members, rather than by the department staff, with the department specialist assisting in report preparation."

It is through this type of participation in advisory committees that we in the City of Los Angeles have found it very effective not only in the occupational health field, but the whole environmental health program. It is through this type of association with industry, labor leaders, professional societies and others that we have been able to stimulate interest in the total environmental health program including occupational health.

There are many benefits that are derived from participating together in such a manner patiently over a long period of time to develop common goals. We have had very gratifying experience working with occupational health advisory groups. Not too long ago a staff member of our Occupational and Radiological Health Division made a comprehensive survey of the metal finishing industry which revealed exemplary installations that would serve as a guide, as well as many hazardous conditions which needed to be corrected. Through such contacts he learned who the leaders in the industry were. These individuals were appointed by our Board of Health Commissioners to a Metal Finishing Advisory Committee. This Committee had before it a working set of rules and regulations to be considered, developed by our staff. Many of the items covered involved such things as degreasing, spray painting, plating, and many other specialized areas. Working with subcommittees in many of the specialized areas, our Department staff worked with this committee for a period of over a year. As a result of this, a comprehensive set of industrial hygiene regulations for this industry were developed and adopted by our Board of Health Commissioners. There are certain advantages not only to industry and to the official governmental agency, but to other government agencies that might have corresponding interests in the field such as the State Division of Industrial Safety and others.

Working with us in the development of such rules and regulations provided for a correlation of information and requirements both by State law and local legislation so that there would be no conflict of interest. Furthermore, in California the State Division of Industrial Safety, through their participation in our program, found that these rules would serve as a good guide to their staff on a state-wide basis. A similar advisory committee recently completed development of a chemical, petroleum, and rubber industry set of rules and regulations for their segment of industry. These rules and regulations were also adopted by our Board of Health Commissioners.

In another area affiliated with our program, that of ionizing radiation, some years ago a Department study of the use of fluoroscopy in shoe fitting resulted in meetings with x-ray equipment manufacturers, shoe store operators, representation from medical and dental professions to discuss our findings. The result of this was primarily to govern shoe fitting machines, but it developed into the total control of ionizing radiation from either machines or materials.

Not only did this group help to develop the rules and regulations, but they supported the concept that fees be provided for such services rendered. This provided a budget of $40,000 a year to pay for staff, equipment, and operating costs of our program.

The cordial relationship between the professional groups in our advisory committees were reflected in the meeting of the assembly interim committee wherein they indicated, much to the surprise of the legislators, that they were willing to have their facilities and their professional offices inspected and checked so that there would be an elimination of all unintentional uses of ionizing radiation.

A significant result of working with advisory committees is the fact that we are always in this day and age fighting for the tax dollar. The concept in the City of Los Angeles has been that all programs be provided on a fee-for-service basis. Although many health agencies throughout the country may object to the concept of charging a fee for service, the response to this program by management people and professional groups has indicated that they would go along with the concept of raising fees from health inspection services. There are a number of do's and don'ts in working with advisory committees that has developed over the years from our experience with such groups. In summary, I would like to state what these may be from our experience in Los Angeles.

Don'ts

1. Don't, under any circumstances, come to an advisory committee meeting with a strong feeling of pride in authorship of any proposal.

2. Don't attempt to "sell" your draft to the committee. Honestly and sincerely seek advice and suggestions, and cheerfully accept constructive criticism.

3. Don't call an advisory committee meeting unless you have something substantial to discuss and you have done thorough staff work. Submit for consideration and discussion a written proposed statement, policy, ordinance, regulations, or program so there is something definite to discuss but with the idea it is subject to major revision.

4. Don't expect committee members to come to important decisions on new topics at the first committee meeting. Encourage them to go back to their sponsoring groups to review proposals and seek advice or authorization for their vote of approval.

Do's

1. Encourage that the presentations and explanations be made by committee members, not Health Department staff. Give them all the help, advice, and "props" you can to enable a good presentation.

2. Keep committee meetings cheerful and on a high plane. Essential is full recognition of all committee members; have chairman make individual introductions or call for self-introduction; include in committee minutes names and affiliations of those attending; give individuals credit in minutes, news reports, and trade journal releases for substantive suggestions or comments; avoid any hint of ridicule regardless of the unreasonableness of any suggestion made by any committee member.

3. Have all minutes, invitations, and announcements signed and presented by the chairman of the committee or subcommittee, not by the Health Department staff.

4. Provide staff services so committee members have background material, receive their announcements on time, and are given personal telephone reminder calls about the pending meeting.

5. Have briefing sessions for committee chairman, arrange for suitable parking and convenient meeting places, and be sure to arrange the meeting at a time most suitable for members whether this be a luncheon meeting, morning or afternoon session, or night meeting.

6. Prepare minutes of all meetings so they can be copied without editing, in trade newsletters and union or trade press. Prepare special releases for trade journals, when requested.

The Department staff should fully understand and support the advisory committee program. Essential to this understanding is a policy of reviewing proposals with Department staff before submitting to advisory committees; or sending to the concerned department staff all proposals going to the advisory committee. Encourage participation or active leadership by those on the Department staff who are concerned. It is through such programming in occupational health that we have been able to progress with the cooperation of all concerned.

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GENERAL SESSION

May 6, 1963 - 2:00 P.M.

The afternoon session was held at the Occupational Health Research and Training Facility, 1014 Broadway, Cincinnati, Ohio, with Dr. Douglas H. K. Lee, Chief, presiding. Dr. Lee discussed an "Overview of Federal Occupational Health Services." Mr. Dohrman H. Byers gave a brief summary of activities on information exchange and training. This was followed by an escorted tour of the various laboratories where each section chief explained highlights of current research projects or field and research studies.

The afternoon session was concluded with an informal report and lantern slide presentation by Mr. Henry N. Doyle, Chief, State Services Branch, Division of Occupational Health, and by Dr. Robert H. Flinn, Assistant Chief, Occupational Medicine Section, Division of Occupational Health, of the recently completed study on the prevalence of silicosis in the metal mining industry. This study was a revaluation of the scope of the silicosis problem at the present time, as compared with earlier studies made during the past five decades. The study, made at the request of a Congressional Committee, was jointly carried out by the Public Health Service and Bureau of Mines, with the Public Health Service being responsible for the medical studies and the Bureau of Mines responsible for the environmental studies. Detailed environmental studies were made with particular reference to the silicosis hazards in sixty-seven metal mines representing a large segment of the industry producing all major metal commodities. Medical studies, including standard full-size X-ray chest films, two pulmonary function tests, and medical and occupational histories, were performed on almost 15,000 metal mine employees. The overall silicosis prevalence rate was 3.4%, a marked reduction from earlier studies made by the Bureau of Mines and the Public Health Service. The prevalence rates varied considerably from mine to mine, ranging from 12.9% silicosis in one mine, to none in seven other mines. Detailed analyses of the medical and environmental data are shown in the report now being completed for publication. This report entitled, "The Silicosis in the Metal Mining Industry -- A Revaluation 1958-1961" should be available in published form, possibly by late September, 1963. Copies may be obtained from the Chief, Division of Occupational Health, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D.C., or the Director, Bureau of Mines, Department of the Interior, Washington, D.C.

GENERAL JOINT MEETING WITH A.I.H.A. AND S.O.T.
MAY 7, 1963 - 1:45 P.M.

THE SECOND INTERNATIONAL SYMPOSIUM ON PERMISSIBLE LIMITS FOR AIR PARIS, APRIL, 1963
PHARMACODYNAMIC, BIOCHEMICAL, AND TOXICOLOGIC METHODS AS BASES FOR AIR QUALITY STANDARDS

Herbert E. Stokinger, Ph.D.
Division of Occupational Health
U.S.P.H.S.

I would like to express my deep gratitude to Professor Rene Truhaut, Chairman of the Symposium, for making it possible for me to present here some of the methods we employ to get acceptable toxicologic information for the recommendation of air quality standards for workplaces.

I would like to make it clear at the outset, that although my discussion is to center on pharmacodynamic, biochemical, and toxicologic methods that may serve as bases for permissible limits for the air of industrial workplaces in the U.S.A., no one principle, technic or data source are relied upon. Rather, recommendations for permissible limits for air are based on worker experience, if such exists in sufficient detail, exactness, and duration. This of course presupposes careful and precise evaluation (monitoring) of the workroom atmosphere and detailed medical supervision of the exposed workers. Because information from this source has not in the past always possessed the desired completeness, data from long-term animal toxicity studies are most commonly used. Frequently data from both sources combined are used when such information is available. In instances where applicable (irritants) human sensory (organoleptic) data form the basis of a recommendation. Thus data from all sources involving all methods and technics of the biologic and medical sciences may be utilized in arriving at recommended limits. One further important principle must be emphasized that is involved in developing hygienic standards for air in the U.S.A., namely we are attempting to an increasing extent to 'tailor' our procedures and technics according to the toxicologic requirements of the substances under study, i.e., to employ specially selected or sometimes unique procedures for specific receptor sites. This is not to imply that 'tailored' technics completely replace standard and routine methods of testing that have been effectively used in the past; rather we use particular and special technics to supplement, extend and refine information obtained from standard procedures.

Nature of U.S.A. Limits. I would like to say also at the start that I speak as Chairman of the Threshold Limits Committee of the American Conference of Governmental Industrial Hygienists; the methods I describe however, are largely those from U.S.P.H.S. laboratories. This Committee has, since 1943, been recommending, revising and more recently publishing annually, limiting values for the air of industrial workplaces. These values are called Threshold Limit Values (1) which with some recent exceptions, are the time-weighted average concentrations of chemical substances that apply to repeated, daily, 8-hour exposure periods throughout a worker's lifetime. All values are substantiated by a justification for their choice documented with references to the technical literature (2). The Threshold Limit Values, TLV's, are practical values. They are intended to provide an effective means of protecting the worker against significant effects, not only on health, but comparative freedom from irritation, discomfort and nuisance in his occupation. In short, Threshold Limit Values are intended to maintain optimal work efficiency and minimize accident proneness. In many industries in the U.S.A. currently, the

major application of the Threshold Limit Values is not toward protecting health, but toward providing comfort, freedom from irritation and nuisance and improvement of general work efficiency; as a result of many years of application of TLV's, health problems in many industries are no longer the primary concern. The Threshold Limit Values are considered as guides in the control of health hazards, and are not to be regarded as fine lines between safe and dangerous concentrations. For this reason, practically all threshold limits contain a factor of safety. They are derived on practical bases and applied practically and directly in industry. They do not represent ideal goals for compliance by industry hopefully at some future date. They are applicable when recommended. The Threshold Limit Values are not intended to be legally mandatory, but are voluntarily accepted by industry as a whole as working standards.

These are the characteristics of the threshold limits of the U.S.A. to which the following methods of pharmacodynamics, biochemistry, and toxicology may be applied (and which I have been assigned to discuss).

PHARMACODYNAMIC METHOD. The basis for using a pharmacodynamic approach (which according to our usage is the study of certain phases of the pharmacologic action of a toxic substance) is that all toxic agents may be considered to produce a stress at some threshold concentration. According to the generally accepted hypothesis of Selye (3) this stress is part of a General Adaptive Syndrome, the first phase of which is an Alarm Reaction. This is followed by an Adaptive Phase. Both phases (responses) have specific and nonspecific components, largely mediated by the endocrines and their associated and interrelated hormones. On these grounds it should be possible to select a specific function of one of the endocrine glands and to relate the change in this specific function to a threshold level of an absorbed substance (the stressing agent). We recognize, however, it may not be enough to determine only this simple relation - of just significant stress respons to a concentration experienced for a defined period of time, and in turn use this concentration as the limiting one for workers' protection. One further and much more difficult step may be required, namely evaluation of the significance of the response to the over-all physiologic economy of the body (adaptation). If it is determined, for example, that there is no detectable alteration from normal body function to be expected from continued repetition of the threshold response, then the exposure concentration giving rise to this stress response is not limiting, but one at some higher level.

As far as we are aware, application of this particular pharmacologic concept of measuring specific endocrine function as a basis for air quality standards is novel. Accordingly the following example may appear crude and imperfect in the light of later developments in this area. The example has, however, we believe, general application to a broad range of inhaled stressing agents.

I^{131} Release Rates as a Measure of Toxic Stress - Alarm Phase. The basis of this particular pharmacodynamic method as developed by Fairchild and Graham (4) is the alteration in the rate of iodine released by the thyroid gland when the host is exposed (by inhalation) to a stressing agent; its practical application to selection of a threshold limit value for air is provided by the precise determination of a threshold concentration experienced for a given time interval and which corresponds to an altered response at its threshold of significance. Compared with recognized toxicologic procedures, this pharmacodynamic method appears

to have much to commend it; the entire method is relatively simple, objective, and by comparison with commonly employed toxicologic procedures, is probably capable of greater precision and is far less time-consuming.

In this present case, the agent is the respiratory irritant, ozone, the exposed subjects, rats. Iodine release is measured as gamma radioactivity of I^{131} in the thyroid glands at varying periods after intraperitoneal injection of I^{131}, compared with the corresponding radioactivity of the glands of the unexposed control animals.

Figure 1 provides detailed radioactivity data on excised thyroids of groups of 6 to 10 rats sacrificed at 24, 48, 96, 192, and 384 hours, compared with I^{131}-injected controls not exposed to ozone. Figure 1 shows the comparative results for rats exposed to 4 ppm ozone for 5 hours (CT = 20 ppm-hours); 2 ppm ozone for 5 hours (CT = 10 ppm-hours); 1 ppm ozone for 5 hours (CT = 5 ppm hours). It is seen that the thyroid release of I^{131} was significantly inhibited ($P < 0.0.$) at 24 hours and at all subsequent periods by 4 ppm ozone; i.e., significantly more iodine remained in the gland than in those of the controls at all periods tested. At a concentration of 2 ppm O_3, however, the I^{131} content of the gland at 24 hours was at the borderline of being statistically different than controls, but was significantly different at all other periods. At 1 ppm there was no statistically significant difference in thyroidal iodine at the 24-hour period, compared with that of controls, but were so at all other periods measured. The 1 ppm ozone level thus gives indication of approaching borderline or threshold concentration for pharmacodynamic effect for the alarm phase of the general syndrome. This may be interpreted to mean that the threshold concentration for a continuous, 5-hour exposure to ozone lies somewhere below 1 ppm ozone. The radiomimetic character of ozone with its characteristic irreversible effect, eliminates the need for evaluating the significance of this phase of the response in terms other than the direct stress response measured; radiation-like effects are believed to have no threshold.

I^{131} Release Rate Method in Adaptive Phase. The borderline concentration giving rise to the first phase of the General Adaptation Syndrome, the Alarm Reaction, has thus been determined by the thyroidal I^{131} release rate method; the second and more important part of the response is the determination of the critical concentration limits of the Adaptive Phase of the syndrome, i.e. to what degree the host may have adapted to the stress as initiated by the Alarm Reaction. Without such evaluation, the determination of the threshold concentration producing the Alarm Reaction may be of no significance. (O_3 and similar edemagenic agents are particularly good agents to test host-adaptation; a protective tolerance against fatal pulmonary edema is produced immediately upon exposure; this tolerance endures for several weeks or months, depending upon its method of production)(4b).

Fig. 2 shows the effect on I^{131} release from the thyroid of rats given 2 preexposures of O_3 at 2 ppm for 5 hours each and then challenged with 4 ppm O_3 for 5 hours. Controls were not given the preexposure but did receive the single challenge exposure to O_3 at 4 ppm for 5 hours. All exposures were thus at a CT of 20 ppm-hours. Fig. 2 indicates that the rats have adapted to the initial stress of O_3 exposure that causes inhibition of I^{131} release (O_3C histograms) by actually reversing I^{131} metabolism of the thyroid in these animals (O_3 P & C histograms); I^{131} release-rates now exceed normal. In a similar study (not shown in Fig. 2) a simi-

lar reversal of I^{131} release rates was observed in rats following preexposures to O_3 as low as 0.5 ppm. These experiments thus show an adaptation that is remarkable in both its rapidity of onset and in range of concentration (4-fold), although the latter was by no means tested throughout its full potential.

Evaluation of the toxicologic significance of the Alarm Reaction at the threshold concentration is not yet completed however; other adaptations to the initial stress are believed to occur. One, for example the tolerance reaction, developed against acute pulmonary edema, is in as yet some unknown way believed to be associated with the ultimate development of pulmonary emphysema, fibrosis and aging effects, if O_3 exposure is continued. At precisely what threshold these adaptive changes cease to be of significance has yet to be determined. It can be said at the present time, however, that no evidence has come to the attention of the Threshold Limits Committee that its present limit of 0.1 ppm for O_3 does not include this threshold with a margin believed to be 2- or 3-fold.

Evaluation of I^{131} Release Rate Method. The ultimate test of the practicability of a method is that the information it furnishes is consistent with practical experience, provided this experience is in turn scientifically based. Let us see how the results of this new method compare with others of recognized repute used for the purpose. 1) Toxicologic methods, Stokinger, et al. (5), Mittler, et al. (6), have indicated uneqivocally a limit below 1 ppm ozone is required for daily, repeated 6-hour exposure not to incur health effects; 2) Clinical and epidemiologic methods used by Challen, et al. (7) permit a similar conclusion; individuals exposed daily to levels of ozone above 0.3 ppm showed symptoms of pulmonary involvement that disappeared when ozone levels were maintained significantly below this limit. 3) Human sensory responses (organoleptic tests) have indicated also a threshold limit for ozone well below 1 ppm; Wilska (8) has reported headache to result from ozone exposures at 1 ppm. The current threshold limit for ozone in the U.S.A. is 0.1 ppm; it is about as soundly based as most of the more than 300 listed limits. The Russian limit for ozone is approximately this figure, being 0.05 ppm (0.1 mg/m^3).

Although it may be premature to make an over-all evaluation of the suitability of this pharmacodynamic method at this time, the above evidence would indicate the following: The thyroidal I^{131} release rate method would appear to yield results that are consistent with other methods recognized to be sound and that conform to test of experience. The method is 1) based on a well recognized principle of response to stress, 2) is relatively rapid and simple to perform, and 3) furnishes objective data that are amenable to statistical evaluation. Until more information is available on its application, it should be regarded as a supplement to, and not a substitute for, presently accepted toxicologic technics.

BIOCHEMICAL METHODS. Quantitative measurement of changes in enzyme activity, the products of enzyme activity (body metabolites) or enzyme cofactors, offer basically sound biochemical approaches to the detection of early metabolic alterations from exposure to toxic chemicals, and often sensitive measures of the adaptive response will be shown. Until recently few laboratories exploited this fruitful area for the purpose of establishing guidelines for threshold limit recommendations. The biochemical approach, as far as we have developed it, differs from the pharmacodynamic method just described, and from the responses of the central nervous system in that any one selected biochemical indicator tends to be far less generally applicable to toxic response as a whole than are the two aforementioned methods. As a

consequence a certain amount of ingenuity may be required in the selection of the proper biochemical indicator for a particular toxic agent. On the other hand, there are a number of biochemical indicators that are rather generally involved in the pretoxic response. In the course of the last few years John T. Mountain and his staff of our laboratory have found the following biochemical constituents to be reliable and sensitive indicators of 'low-grade' responses to inhaled substances. In our terminology 'low-grade' means early, mild, reversible metabolic alterations.

Tissue and Serum Alkaline Phosphatase Activity. Statistically significant changes in lung alkaline phosphatase of animals exposed to relatively low concentrations of ozone are shown in Table 1. A particular improvement in the method is to be noted here; note there are two columns expressing phosphatase activity. The one on the right shows heightened phosphase activity well above the normal phosphatase activity. This is achieved by addition of trace amounts of magnesium ion. Addition of magnesium ion has the advantage of providing more easily differentiable values from those of controls, and in addition tends to reduce the spread in individual variation. Note that the 't' test of significance is extremely high in all instances in which magnesium is used.

Similar test results are shown for phosphatase activity of the serum of rats exposed to ozone (Table 2).

Similar results also have been obtained using the phosphatase activity method in mice exposed to nitrogen dioxide (9), and in rats exposed to diphosgene (10). Such results give unmistakable evidence of the usefulness of changes in alkaline phosphatase activity as a sensitive indicator of early response to pulmonary irritants. These enzyme changes are consistent with alterations in the lung nucleic acid content following exposure to ozone (11) and serve as forerunners of prediction of the ultimate histologic changes (emphysema and chronic fibrosis) that will ultimately appear in the lungs of animals exposed at these air concentrations. In practice, limiting phosphatase levels could be established for the control of exposures.

Measurement of renal alkaline phosphatase has also proved to be an early, sensitive, indicator of response from lung-deposited beryllium; four days following the intratracheal injection of 150 micrograms beryllium in the form of bertrandite ore, the alkaline phosphatase activity of rat kidneys was 25% of that of untreated animals (13).

Glutathione. Recent progress in biochemical understanding of requisites for integrity at the cellular and molecular (enzyme) levels point to a prominent role for reduced glutathione (GSH) (12). It is now recognized that many environmental agents that tend to reduce the quantity or stability of GSH in target tissue predispose to injury (9). Use of this recent concept has been made to measure the response in lung GSH following exposure to ozone. Fig. 3 shows significant reduction in the GSH content of mouse lung 2 hours following exposure to 8 ppm O_3 for 3 hours; it may be seen that the average GSH content is reduced from about 500 µg/lung to half this value by a single exposure to ozone. Loss of GSH from tissue has been demonstrated in carbon tetrachloride poisoning also (14). The favorable effects of vitamin B_{12} supplementation of the diet on GSH synthesis suggests another factor for estimating response to toxic agents. Although we have not employed vitamin B_{12} in our toxicologic investigations, Dinman, et. al. (15) have used both

Table 1.

RAT LUNG ALKALINE PHOSPHATASE ACTIVITY
Effects of Intermittent 6-Hour Daily Exposure
To 3.7 ppm O_3

Assay System: Basic activity - each assay tube contained 1 ml. water, 1 ml. autolyzed, dialyzed homogenate containing 1 mg. lung (1), 5 ml. of a mixture of equal volumes of 0.02% w/v beta-naphthyl phosphate and 0.1 M sodium barbital buffer, pH 9.1. For magnesium activation 1 ml. of 0.01 M magnesium chloride solution replaced the water. Color development and readings carried out as in refs. 11, 28.

DAYS		RAT GROUPS (10 each)	PHOSPHATASE ACTIVITY UNITS*	
Calendar	Exposure		BASIC	Mg ADDED
38	19	Control	2.97 ± 0.78	8.60 ± 2.03
		Exposed	7.10 ± 4.95	15.80 ± 3.66
		't' test	P < .025	P < .005
116	30	Control	3.52 ± 1.03	6.22 ± 1.56
		Exposed	6.86 ± 1.73	10.50 ± 1.70
		't' test	P < .005	P < .005

*One activity unit represents 1 microgram of phosphorus stoichiometrically equivalent to the naphthol released from the substrate when acted upon by 1 milligram tissue for 1 hour. (John T. Mountain, 138th Nat'l. Meeting, Am. Chem. Soc., New York, Sept. 11-16, 1960)

Table 2.

RAT SERUM ALKALINE PHOSPHATASE AFTER INTERMITTENT 6-HOUR EXPOSURE TO 3.7 ppm OZONE

Assay System: 1 ml. of 1:50 serum instead of tissue.

DAYS Calendar	DAYS Exposure	RAT GROUPS (10 each)	PHOSPHATASE ACTIVITY UNITS* BASIC	PHOSPHATASE ACTIVITY UNITS* $\bar{c}$ 0.0014 M Mg
38	19	Control	25.9 ± 7.0	33.4 ± 10.0
		Exposed	39.3 ± 11.0	51.7 ± 12.9
		't' test	P < .005	P < .005
80	25	Control	22.3 ± 5.7	27.1 ± 6.9
		Exposed	35.7 ± 8.6	51.8 ± 12.9
		't' test	P < .005	P < .005
116	30	Control	33.8 ± 7.1	38.8 ± 10.6
		Exposed	53.5 ± 16.0	77.3 ± 14.5
		't' test	P < .005	P < .005

*In mg. P liberated per hr per 100 ml. serum from beta naphthyl phosphate. (John T. Mountain, 138th Nat'l. Meeting Am. Chem. Soc., New York, Sept. 11-16, 1960.)

total and combined blood vitamin B_{12} as one of a multicomponent, 'biochemical profile' of human response to toxic agents.

Use of GSH levels should prove advantageous as a biochemical guide to the development of air quality standards, particularly for oxidants or for those substances whose metabolic products have distinct oxidant potential. Heavy metals are capable of affecting the blood glutathione level. Polish investigators have reported that changes occur as a result of chronic lead poisoning (16). Because there are factors other than GSH that serve to maintain the requisite reduced state of the normally functioning cell, particularly the nucleated cell, application of GSH as a biochemical indicator of response may not prove so general as the aforementioned methods. Furthermore the measured GSH being some fraction of the normal value requires careful evaluation to determine the significance for cellular integrity and survival.

Cystine. The closely related sulfur amino acid cystine, in the hair of animals and in the nails of man, has in our hands proved to be an early, sensitive, indicator of the pretoxic state of a number of chronic diseases (17). Table 3 shows that the application of hair cystine analysis is capable of detecting differences in groups of rats exposed by inhalation to vanadium pentoxide dust at daily effective doses of vanadium calculated to be of the order of 5 µg/day. It is seen that in one month's time there is a decreasing amount of cystine in the hair of the exposed animals that is progressively more noticeable by the 6th month of exposure. Here the exposure terminated. Adaptation and recovery to normal is indicated by the return of the values of exposed to the values of the control groups. This indicates the reversibility of the metabolic change caused by the vanadium exposure, and the high sensitivity of the method.

The counterpart of these cystine changes have also been demonstrated in industrial vanadium workers, both in the U.S.A. and in Peru, and in oil-refinery workers in Aruba and Curacao (18). The report presents a large amount of data on the cystine content of the fingernails of vanadium exposed workers, compared with those of normal population in the western hemisphere. It is the conclusion of this report that changes in fingernail cystine content are a highly sensitive indicator of early metabolic change resulting from vanadium exposure. Because similar changes were observed among workers after long (10 years) exposure to lead, among individuals with certain chronic diseases, it is believed that the fingernail cystine test will prove to be a highly sensitive indicator for metabolic disturbances involving cystine (sulfur) metabolism.

The biochemical basis for the choice of cystine as an early indicator in these conditions, is the established fact that the first demands of the body for cystine (cysteine) is for the synthesis of plasma proteins, secondarily for liver and other parenchymal proteins, and finally, the cystine that is residual after these uses, is incorporated in the dermal appendages. Under normal demands the residual cystine pool is sufficient to maintain fingernail cystine in man at or slightly above 10.2% in the U.S.A. When, however, under abnormal demands of toxic stress or interference with normal synthesis or metabolism, the cystine pool is reduced, such effects first become manifest by a reduction of the cystine content in the dermal appendages, the fingernail of man, or the hair of animals. This situation predisposing toward delicate balance between cystine reserves and cystine demands, offers a rather unusual opportunity to measure quantitatively the effect of toxic stress on this balance.

Table 3.

CHANGES IN CYSTINE CONTENT OF HAIR OF RATS EXPOSED TO VANADIUM

Av. Exposure Concentration 0.5 Mg V/m^3 as V_2O_5

Calc'd. Effective Dose/Exposure Day, 5 µg V

	% CYSTINE IN HAIR*				
	Time Following Exposure to V_2O_5 Dust				
				Adaptation & Recovery Phase	
	1 month	3 months	6 months	10 months	13 months
V_2O_5 Exposed	11.39 ± 0.39	11.47 ± .45	11.10 ± .42	11.83 ± .30	12.33 ± .47
Controls, No Exposure.	11.76 ± .54	11.61 ± .32	12.04 ± .42	12.03 ± .38	12.15 ± .44
't' test	Not sig.	Not sig.	P < .005	Not sig.	Not. sig.

End of Exposure

*Average cystine values determined in duplicate on 10 rats/group (Mountain, Stockell, Wagner, Stokinger, 1954.)

As previously noted, evaluation of the significance of the decrease in cystine values is still a requisite before proper interpretation of the change can be made in terms of a threshold limit. For example, can the animal body continue to function in an acceptable manner indefinitely at a keratin cystine value depressed 1% from normal? 2% from normal? This question must be answered before it can be stated with assurance that the exposure concentration resulting in the 1% or 2% change from normal is significant. One obvious way to make this determination is to continue the study at the depressed cystine level for a period of time sufficient to ascertain whether the depressed cystine values have led to irreversible changes (histopathology).

Serum Protein Changes. One final procedure, though disarmingly simple, possesses characteristics that strongly suggest its use as a very good general indicator of metabolic derangement, namely changes in serum protein ratios determined by paper electrophoresis. It is important to note in this connection that the albumin to globulin ratio (A/G) is directly related to the cystine content of the total serum proteins (19). In view of the cystine method just mentioned, the cystine content of serum would furnish an equally reliable procedure, but it is easier with present laboratory developments to determine these changes by methods of paper electrophoresis.

TOXICOLOGIC METHODS. The foregoing six methods are what we consider in the U.S. actually part of our toxicologic procedures. The keynote of our toxicologic effort is 'tailoring' the procedures to the substance under test. Where applicable, we might employ one or more of the above-mentioned tests (or tests of similar type) to supplement information obtained from generally accepted methods of toxicologic procedures (20).

'Standard' Operating Procedures. Although no completely standardized procedures are in general use throughout the U.S.A. for developing toxicologic data in animals for air limits, the clear objective of the work makes for rather uniform and systematic procedures. To simulate the exposure of industrial workers, large groups of animals of several species are exposed in large, dynamic, chambers air-conditioned to 76° to 78° F. for 6 or 7 hours daily, 5 days each week, for a total period of from 6 months to 2.5 years or longer, depending upon the toxicologic nature of the substance under test. There is insistence on analytically determined chamber air concentrations. When feasible, sampling, analysis and control of temperature, air-flow and humidity are fully automated. Periodic examination of representative groups of the exposed animals for routine, hematologic, histologic, etc., tests and for tests specially 'tailored' to the toxicologic activity of the substance are considered basic requisites for the chronic inhalation studies.

The Threshold Limits Committee of the A.C.G.I.H. has produced a booklet (21) that suggests procedures for developing acceptable data for their evaluation and recommendation of threshold limits. Guiding principles are included in the hope of gaining greater uniformity of the basic data, but the growing tendency of tailoring the research investigations to the toxicologic needs of the substance is encouraged. In this country the chemical industry develops data on the toxicity of its products and often for the recommendation of threshold limits of its products.

Tests for Tumorigenic, Tumor-accelerating and-inhibiting Agents. As a matter of course, of late, we have included into the routine toxicologic exposure an additional procedure that we feel is capable of yielding highly important results. It is the determination of agents showing tumorigenic potential, or tumor accelerator-, (promoter-) or inhibitor-potential. The most highly sensitive method known, the test employs mice of known lung-tumor susceptibility. Groups of 20 to 40 mice are examined for lung-tumor development periodically throughout the course of the daily exposures and compared with equal number of unexposed controls; 200 exposed and 200 control animals are considered a minimal number to provide adequate size groups for periodic examination. Strains of mice with known tumor susceptibility at other organ sites might be used if the particular substance under test is suspected of organ tumor specificity.

Tests of Mutagenicity and Effects on Reproduction. Because chemicals with mutagenic potential and potential effect on reproduction are appearing in increasing numbers on the industrial scene, tests to determine the potential should be included in the usual toxicologic procedures. Sufficient numbers of mice or rats should be exposed with their offspring and carried through the F_2 generation, records being kept on reproduction rate, offspring survival and evidence of genetic defect in comparison with controls. This essentially tests the effect of a superimposed stress on the stress of the toxic agent; other types of added stress can be tested.

Effect of Work. A procedure that can be added to advantage to the standard toxicologic exposure operation is an exercise cage (22). Inserted within the exposure chamber, this is an electrically-driven rotating cage with a capacity for 10 to 20 rats designed to simulate in animals the effects of work stress during exposure. It has been found that the white rat can tolerate indefinitely rotation at 7 rpm (18" diameter wheel) for 5 minutes during each hour of a 6-hour daily exposure; more extended periods of rotation cannot be tolerated indefinitely. Used in the manner prescribed, it was demonstrated that rats so exercised showed greatly potentiated effects from ozone exposure, insignificantly different effects upon exercise in exposure to vanadium pentoxide dust.

Effect of Alcohol. In a similar manner, a special group of rats or mice, to whose drinking water alcohol has been added, may be included in the exposed animal complement. The purpose of the alcohol-imbibing group is to simulate the stress of excessive alcoholic intake in a worker on the normal toxicity of the substance under test. The alcoholic content of the water should not exceed 8.5% to be tolerated indefinitely without adverse effects per se on the rodents. Comparisons of the toxic response by any of the aforementioned methods can be readily made of this group and that of the exposed nonalcohol-treated groups.

Nutritional and Hepatotoxic Stress. Suboptimal diets, often specifically modified to 'light up' or uncover latent or borderline toxicity, is another form of stress that can be used to advantage. For example, if it is suspected that the metabolism of a toxic agent increases the elimination of metal ions, a diet low in metals would reveal the toxicity in greater depth than a normal or mineral-rich diet. Similarly, if a toxic agent is suspected of utilizing liver metabolites to conjugate with the toxic agent for its detoxication, superimposition of some hepatotoxic agent (turpentine), that adds another stress to the liver, may reveal latent toxicity. At the same time, positive findings with these procedures identifies an important part of the mechanism by which the body handles the substance.

Blood, Urinalysis and Electrolyte Changes. Search for specific metabolites in blood, urine (or in exhalations) may not only be highly rewarding in relating the amount of absorption, retention, and excretion to the level of exposure, but may be particularly revealing in two other respects, 1) in identifying the metabolite(s) and in developing a method for monitoring worker exposure and ultimate development of a 'biologic threshold limit.'

In regard to 1) space permits only reference to the vast amount of information available on the urinary metabolites of hundreds of organic compounds of industrial interest (23). This reference work provides a basis for developing much needed information on the excretion of new industrial chemicals undergoing toxicologic test. Elkins (24) in this country, has a continuing program to develop 'biologic threshold limits,' based on quantitative estimation of urinary metabolite levels corresponding to the recommended air limits in on-the-job workers.

Two examples only of 2) will be given to illustrate the powerful tool that is available in physical analytic methods (emission spectrograph, U.V. spectrophotometer). The latter provides rapid exploration of the blood for specific changes in organic constituents; the former for inorganic electrolytes.

Spectrochemical Method for Electrolyte Shifts. The shifts in tissue electrolyte as a result of toxic exposure are an almost totally neglected area in industrial toxicologic research. Spectrochemical analysis of urine, serum and tissues offers a rapid, quantitative and specific method of determining such shifts. Spectrochemical determination of zinc in the urine and later in serum and spinal cord, along with copper, revealed that marked loss of zinc and copper from the tissues occurred as one of the earliest signs of intoxication of rabbits from carbon disulfide exposure (25). Not only did spectrochemical analysis of serum and tissue confirm the course of the electrolyte shift from tissue to serum to urine, but it provided the clue to the probable mechanism of action of carbon disulfide intoxication, namely the removal of spinal cord-based electrolyte through the sequestering action of CS_2-protein chelate, 2-thio-5-thiazolidone. This in vivo developed chelate was confirmed by U.V. spectrophotometric measurements; a characteristic spectrum with maximal absorption at 280 mu was observed. Electrolyte shifts have been found important in CCl_4-poisoning, in differentiating berylliosis from sarcoidosis by differences in sodium and potassium shifts in the lung (26) and marked alteration in many tissue electrolytes follows exposure of rats to tetraethyl- and tetramethyl lead (27). Very probably spectrochemical investigation will show electrolyte shifts to be a general manifestation of most toxic actions.

U. S. Spectrophotometric and Immunochemical Technics for Antibodies to Toxic Agents. It is gradually becoming recognized, (28, 29) that inhaled inanimate substances may give rise to circulating antibodies as does inhaled animate matter such as bacteria. Examples of such immunochemically active substances on which evidence has been reported are silica, CS_2, O_3, and toluene diisocyanate (30). The U.V. spectrophotometer has shown characteristic bands in the serum of rabbits exposed to CS_2, has shown characteristic changes in tyrosine molecule as a result of ozone exposure (31), and conventional precipitin and more recent techniques of immunochemistry have identified and characterized antibodies to ozone and toluene diisocyanate. By the application of immunochemical techniques, notably those demonstrating production of antibodies, it is possible to determine the limiting exposure

concentration at which antibodies are just demonstrable. By such a procedure, for example, circulating antibodies were shown to develop in guinea pigs exposed to toluene diisocyanate, TDI, for a few brief periods at 0.1 ppm. Because this was interpreted to be an adverse response, a threshold limit less than 0.1 ppm for TDI was indicated. The current threshold limit for TDI is 0.02 ppm.

SUMMARY

One rather generally applicable pharmacodynamic method, 4 biochemical methods, and 6 somewhat special toxicologic procedures that may be used to develop practical threshold limits for the air of workplaces have been presented, along with some basis for their selection, some evidence of their effectiveness and in some instances, some evaluation of their merit relative to other commonly accepted methods. These methods are considered for the most part as supplements to and not substitutes for the commonly accepted toxicologic methods. The newer methods represent an attempt to foster a more enlightened experimental approach to toxicologic data-collecting by tailoring the technical procedures to the toxicologic action of the test substance. If one were to select 2 methods from several presented that show greatest promise, one would select the I^{131} release rate as a measure of toxic stress, and the spectrochemical determination of tissue electrolyte shifts. Both methods possess high sensitivity coupled with general applicability.

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COMMENTS FOLLOWING PAPER BY DR. STOKINGER AT THE AMERICAN INDUSTRIAL HYGIENE CONFERENCE, MAY 7, 1963

W. Clark Cooper, M. D.
Chief, Division of Occupational Health
U. S. Public Health Service

I am Dr. W. Clark Cooper, Chief of the Division of Occupational Health of the U. S. Public Health Service.

I think it is important for the record for me to re-emphasize some of the circumstances surrounding this Symposium on Permissible Limits. I feel that this may allay the concern of some who may feel that we are moving too rapidly into the complex field of international standard setting. I would like to make three points:

First, I think the sponsorship of the meeting needs clarification. As I understand it, the Paris Symposium was arranged by the Subcommittee on Permissible Limits of Toxic Substances in Industry, under the permanent International Committee on Occupational Medicine which, as you know, sponsors the Triennial International

Congress. The Symposium was co-sponsored by the International Labour Organization and the International Union of Pure and Applied Chemistry, the latter being involved particularly because of the importance of precise and sensitive analytic methods relative to recommended standards. The World Health Organization had an observer at the meeting, but I do not think was a sponsor.

Second, as Dr. Stokinger indicated, he attended in his capacity as Chairman of the Threshold Limits Committee of the American Conference of Governmental Industrial Hygienists. He was personally invited to present a paper on methods being used in the United States. He was not a representative of the Public Health Service or of the United States Government. Our government had not been invited to send a delegate to what was primarily a discussion of experts acting as individual scientists.

Third, the values that were provisionally agreed upon are presumably subject to consideration by the parent committee, which, as Dr. Stokinger indicated, will probably discuss them at the time of the Madrid meeting. They are thus highly provisional at this time.

I would also like to make some personal comments on the subject matter. I regret the omission of adequate discussion of the important questions of philosophy and objectives in the development of definitions in this field. In view of the problems we have in securing agreement among standard setting groups in our own country, I cannot believe that international agreement in these areas can be taken for granted. The scientific and technical questions involved here are very difficult, and I think there is need to discuss them seriously in a spirit of understanding, rather than permitting them to become skirmishes in the cold war.

I think that we can regard this Symposium as being in the nature of a tentative probing in this field of international cooperation. I am glad that Dr. Stokinger was able to attend and participate with his colleagues in Europe and to give you such an interesting account of the experience. I am sure that over the years these pioneering efforts will prove fruitful.

FIG 1.

CHANGE IN THYROIDAL I^{131} RELEASE RATE
FOLLOWING EXPOSURE OF RATS TO OZONE

5 - HOUR EXPOSURES AT
4, 2, AND 1ppm

NUMERALS ABOVE BARS = NUMBER
OF RATS PER GROUP

* = P > .05
. = P < .05
.. = P < .01

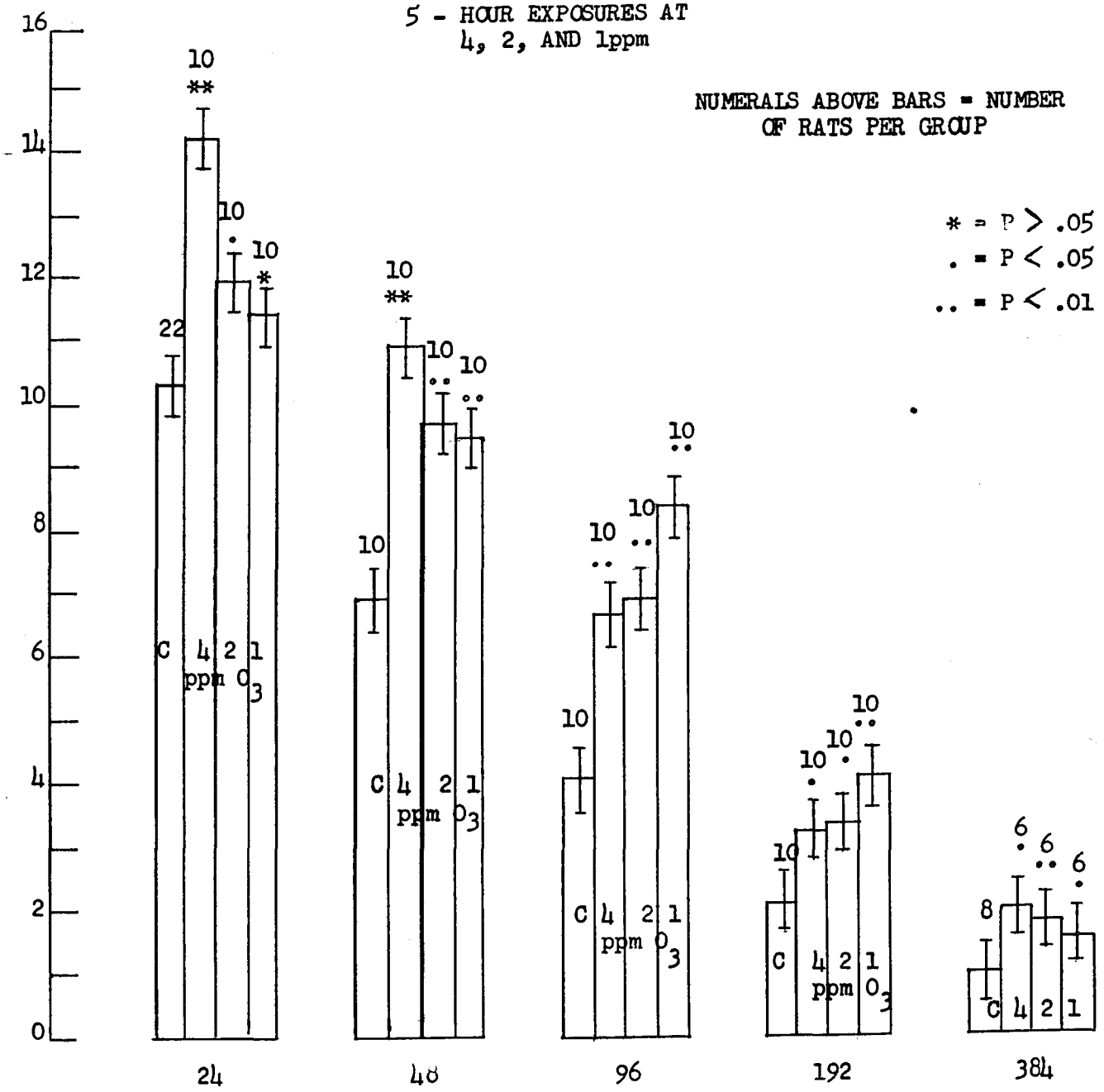


FIG 2.

THYROIDAL I^{131} RELEASE RATE IN O_3 ADAPTED RATS

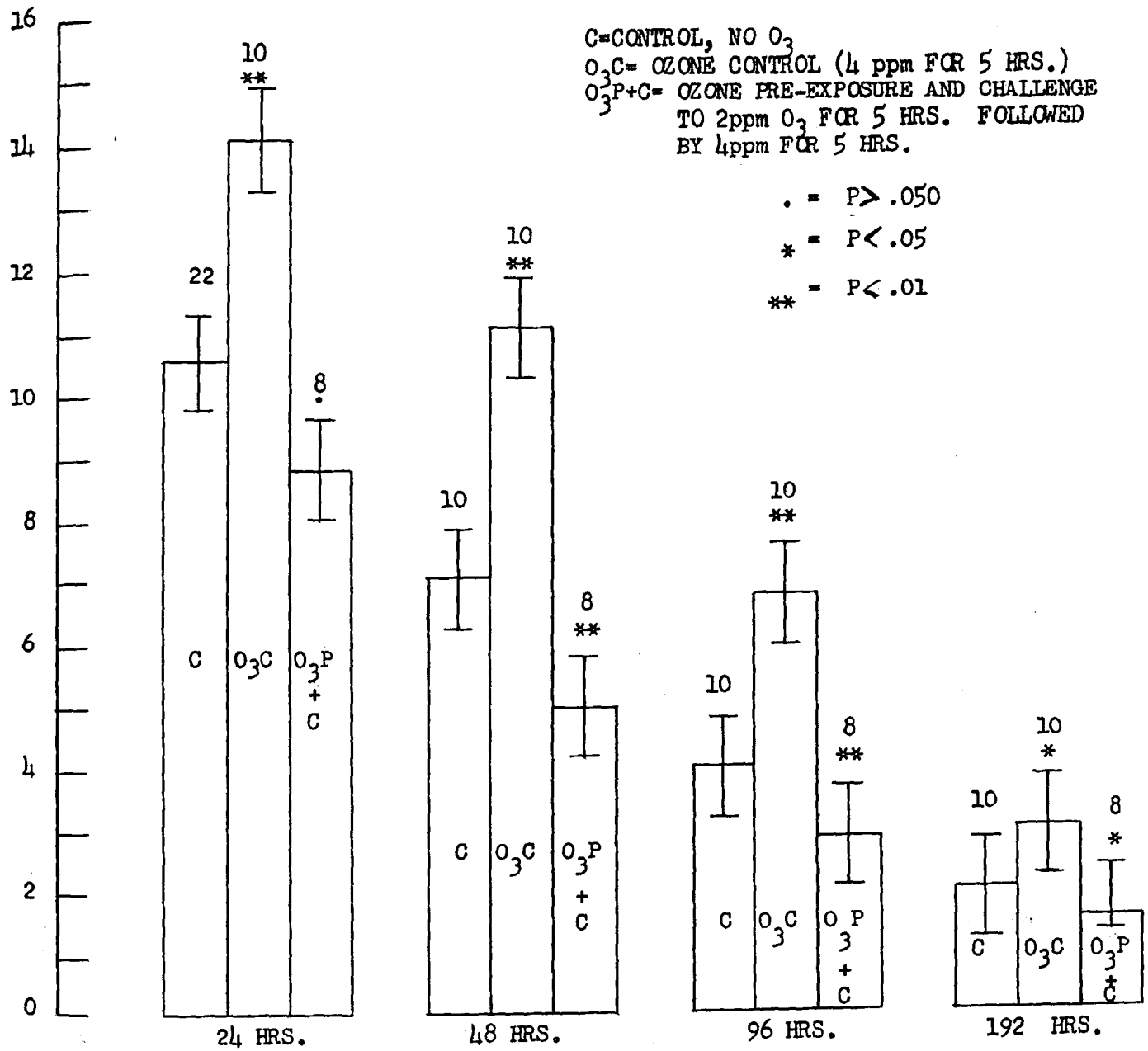
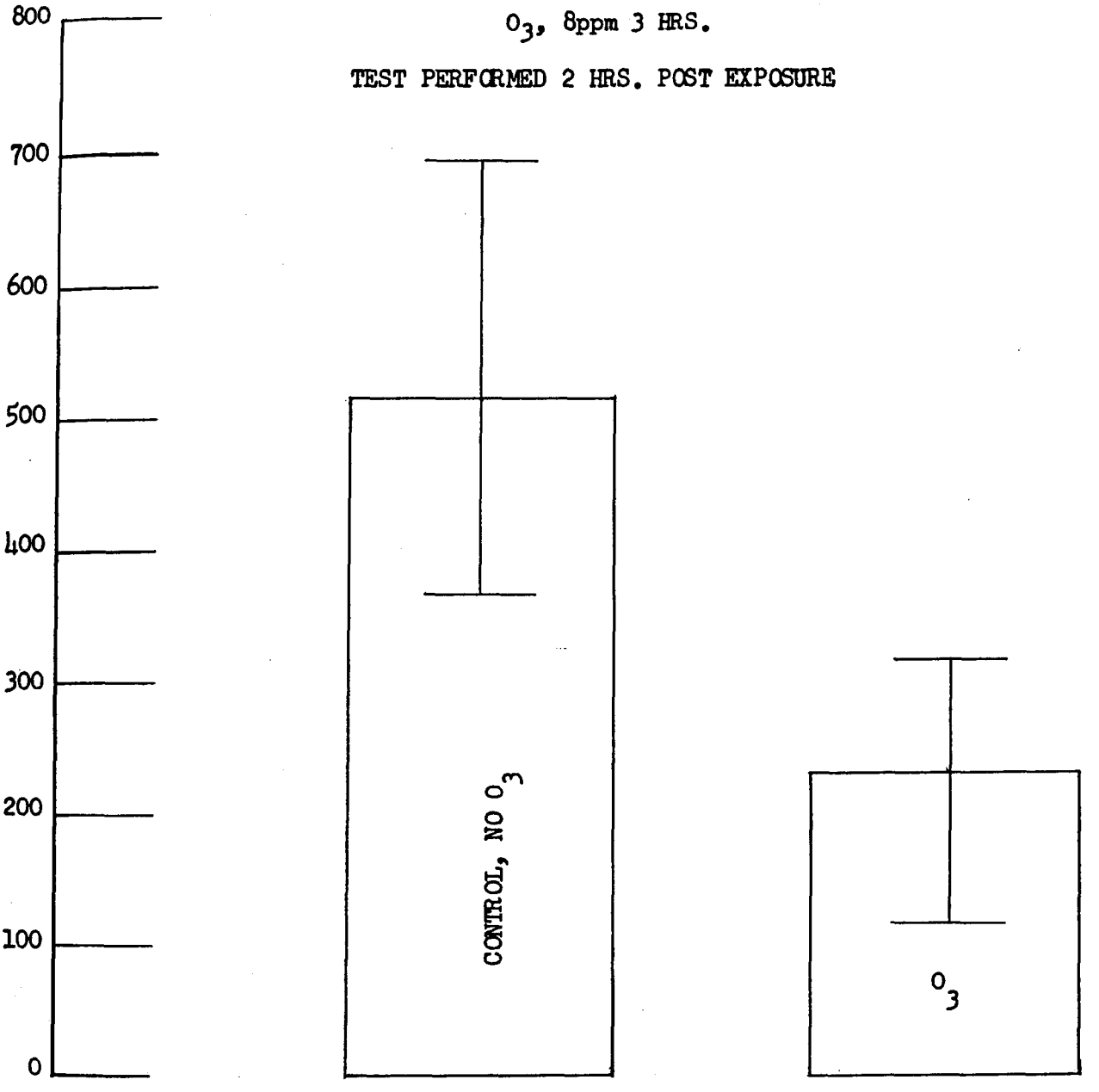


FIG. 3.

REDUCTION OF GLUTATHIONE IN MOUSE LUNG
FOLLOWING OZONE EXPOSURE

O_3, 8ppm 3 HRS.

TEST PERFORMED 2 HRS. POST EXPOSURE



BUSINESS SESSION - May 6, 1963

E. Lynn Schall, Chairman, Presiding

The first business session of the 25th Annual Meeting of the American Conference of Governmental Industrial Hygienists convened in Parlors 7, 8, and 9 of the Sheraton-Gibson Hotel, Cincinnati, Ohio, at 11:00 A.M., Monday, May 6, 1963, with E. Lynn Schall, Chairman, presiding.

CHAIRMAN SCHALL: The business session of the 25th annual meeting is now called to order.

We have a few brief announcements. The concurrent round-tables tomorrow morning will start at 8:30. We announced earlier that the buses for 1014 Broadway leave here from the Vine Street entrance. There is no Vine Street entrance. They will leave from the main entrance.

I would like to remind you of the annual banquet which is a smorgasbord. Tickets are now on sale and must be purchased before 5:00 P.M., today. The smorgasbord will be held in this hotel tomorrow night at 7:15 P.M. in the Florentine Room with a marvelous dinner for which they are noted here, excellent speakers, and there are going to be marvelous table favors for everyone, plus three excellent prizes, so I know you are in for a very good time and I hope all of you can make it.

The first item on the agenda is the announcement of the Resolutions Committee. This consists of Dr. Edwin G. Williams as Chairman, Miss Victoria M. Trasko, and Mr. Norman E. Schell. This group is requested to meet today or this evening to prepare resolutions and to meet at 7:30 tomorrow morning in Room 470 with the Executive Committee to discuss the proposed resolutions.

The next item on the agenda is the report of the Secretary-Treasurer, Mr. Andrew D. Hosey.

MR. HOSEY: I am sure all of you will be interested in the results of the ballots for officers for next year. Dr. Lewis J. Cralley is the new Chairman-elect; Dr. Curtis P. McCammon was elected to a three-year term on the Executive Committee, and I was re-elected Secretary-Treasurer. Three hundred thirty-seven (337) votes were cast on the question of an Amendment to our Constitution to permit the formation of local sections. Of these three hundred thirty (330) were in favor and forty-seven (47) were opposed. Twenty-four (24) individuals did not vote. The Amendment carried by more than a two-thirds majority of those voting. The ballots were counted by Mr. Howard L. Kusnetz, Mrs. Gertrude Clephane, and Mrs. Marlene Schmidt in my presence.

Some of the "old timers" in this Conference can probably remember something about our organization, functions, and growth. Since this is our 25th Anniversary, I thought you would be interested in a brief review of our past history. Furthermore, this is one way to get the facts into the Transactions on this, our 25th Anniversary.

The following information was supplied in part by Vicki Trasko and by Jack Bloomfield - the latter was from his banquet speech at our 20th Annual Meeting, held in Atlantic City, April 20-22, 1958. I suggest that on some rainy day when you have nothing else to do, that you read Jack's speech on pp. 1-9 in the 1958 Transactions.

We have come a long way from seventy-six members and a cash balance of $25.00 in the Treasury in 1938 to six hundred sixty members and a net worth of $21,217.56 in 1963. But, let's go back to the beginning. ACGIH is really an outgrowth of two seminars conducted in Washington, D.C., by the Division of Industrial Hygiene in the Public Health Service in 1936 and 1937. These seminars were set up for the guidance of persons engaged in the field of industrial hygiene from State and local health departments. Forty persons attended the first one and over one hundred attended the second seminar in 1937. During the last week of the second seminar it was agreed that these annual seminars should be continued but that they should be held under the auspices of a non-official organization, similar to the Conference of State Sanitary Engineers. In fact, according to Jack Bloomfield, "in writing the Constitution for ACGIH, we used the Constitution of the Conference of State Sanitary Engineers as a guide." According to a statement in the 1938 Transactions by Dr. Albert S. Gray, the Conference was originated and encouraged by the Industrial Hygiene Committee of the State and Territorial Health Officers. ACGIH was originally called the National Conference of Governmental Industrial Hygienists and held its first meeting in Washington, D.C., June 27 through June 29, 1938. (Incidentally, the name of the Conference was changed from the National Conference of Governmental Industrial Hygienists to the present ACGIH during the period 1945-1946. Some of you may recall that no meeting was held in 1945, probably because of war time restrictions on travel.) The membership totaled seventy-six persons representing 25 states, Public Health Service, Bureau of Mines, TVA, and two universities. Membership was restrictive at that time. Of the total number, fifty-nine were full members, sixteen associate, and one affiliate (Dr. Parney of Canada). Forty-three members, one associate, and six guests attended this first meeting. Dr. Albert S. Gray was the first Chairman of the Conference; Dr. Carl Nau was the Chairman-elect and Mr. John J. Bloomfield was the Secretary-Treasurer.

Objectives of the Conference as stated in the Constitution in 1938 and reaffirmed in the revised Constitution in 1951 were: To promote industrial hygiene in all its aspects and phases; to coordinate industrial hygiene activities by official federal, state, local, and territorial industrial hygiene agencies; to encourage the interchange of experience among industrial hygiene personnel in such official organizations; to collect and make accessible to all governmental industrial hygienists such information and data as may be of assistance to them in the proper fulfillment of their duties; and to hold annual and other such meetings as may be necessary to effectuate the purpose of this organization.

I would like to quote here one paragraph from Jack Bloomfield's banquet speech on the occasion of our 20th Anniversary: "Now, I feel that we were able to accomplish all these things because from our very beginning we realized that our real strength as official agencies lay not in large numbers but in our ability to work uniformly and as a team, that we had to operate among forty-eight states, each perhaps with different legal requirements at to industrial hygiene practices."

At this point, I believe you will be interested in a statistical summary of affairs of this Conference for each five year period, which in my opinion, substantiates Jack's statement that we have accomplished our objectives.

Year	Membership	No. of Standing Committees	Balance in Treasury
1938	76	3 or 4	$ 25.00
1943	212	?	127.86
1948	246	10	272.45
1953	296	11	963.82
1958	419	17	7,389.83
1963	660	23	21,217.56

Former officers of this Conference have stated repeatedly that the number of members or the cash balance in the Treasury are not necessarily indicators of the effectiveness or usefulness of this Conference. I agree fully with such a statement. I would, however, call your attention to the increase in committee activities in this Conference. To me, this is an indication that ours is a working professional organization.

Furthermore, in reviewing previous reports by the Secretary-Treasurer, I found many interesting statements that indicate the continuing contributions made by our Conference in the field of industrial hygiene. Among these, I quote from Pete Yaffe's report made in 1959: "The extent to which the reputation of ACGIH has grown not only in this country, but throughout the world, is evident from the requests received daily for copies of its various publications. In addition, many inquiries for technical information are received."

This brings me up to a brief report of our current year's activities. You will hear some of the committee reports later but let me list a few of the highlights here.

Requests for and sales of our publications have continued to increase. Heading the list is the sale of about 35,500 copies of the 1962 TLV's. Our supply was exhausted about a month ago. Next is the Industrial Ventilation Manual with about 3,600 copies sold. Six hundred thirty-one copies of the first and second edition of the Air Sampling Instruments Manual; four hundred forty-three copies of the Documentation of TLV's; one hundred three Guide to Records for Health Services in Small Industries; and sixty copies of the Analytical Manual were sold during the year. In addition to the sales of these publications, we received forty-two requests to reprint the 1962 TLV's. Most of these requests originated in the United States, but one each was from Chile, Argentina, Great Britain, Sweden, Canada, and Puerto Rico. One request was granted to reprint the Documentation of TLV's into Japanese and several requests were granted to reprint the proposed Coin Operated Dry Cleaning Code. The sales and requests received to reprint these and other of our publications attest to the splendid work done by our committees.

Three new publications became available during the year (the Documentation of TLV's should really be included as a fourth because we sold only 13 copies last year and we paid the bill this year): (1) the Second Edition of the Air Sampling Instruments Manual; (2) Selected Bibliography of Radiation Protection Organizations; and (3) the joint AIHA-ACGIH Manual of Respiratory Protective Devices. The latter two are "hot-off-the-press" and sales are expected to be good for these two valuable publications. You may recall that ACGIH agreed to share with AIHA on a 50-50 basis the costs incurred in publishing the Respirator Manual, and that we would split also the profits from its sale. The costs for typing, editing the final manuscript, and incidental expenses to date were $1,698.62 (the printing costs are not included in this figure as the bill will not be submitted until late May). Our cost to date is $849.31.

At this point I want to call your attention to a few figures from the Treasurer's report, which will follow shortly. Total cash receipts for this year were $19,245.98 which includes nearly $5,000.00 from the Ventilation Committee. This compares with $9,207.37 for 1961-1962 and includes a little over $2,200.00 from the Ventilation Committee. Our cash disbursements this year were $14,183.03 compared with $7,471.90 for last year. You will note that we handled about twice as much cash this year over 1961-1962. The cost of publishing the Air Sampling Instruments Manual and advertising ($6,013.00) and the Documentation of TLV's ($1,409.00) accounts for nearly $7,500.00 of the $19,000.00. On the income side of the ledger (and I know that Irv Davis and Herb Stokinger will be glad to learn this), we received $6,088.55 from the sale of the Air Sampling Instruments Manual. Of this amount, $440.62 is profit from the first edition and $617.40 came from the sale of reprints. Thus, we recovered nearly $5,000.00 of our investment of $6,000.00 on this Manual. We received $1,750.00 from sales of the Documentation of TLV's or nearly $500.00 profit so far. I want to point out, however, that none of these figures includes postage or miscellaneous stationery charges.

I have taken time to cite the above figures to emphasize once again that we are still a growing organization. Also, the services offered to our membership and other industrial hygienists are increasing each year.

As of June 15, 1962 (this was following the annual meeting when a number of members were dropped for non-payment of dues), 595 members were employed by governmental agencies in 45 states, the District of Columbia, and the Commonwealth of Puerto Rico. There were no members in these states: Arizona, Arkansas, Delaware, North Dakota, and Nevada. Fifty-eight or about 10% of the members resided in other countries and this number will probably be increased considerably this year. In 1962, California topped the list with 68 members (11.5%); Pennsylvania was second with 56 members (9.5%); Ohio third with 52 (8.8%); New York fourth with 40 (6.7%); and Maryland and the District of Columbia were tied for fifth place with 38 members each or about 6.4%. So it appears that we need to arouse interest in this Conference in those five states where we have no members and we need to stimulate interest in those states with just a few members.

According to George Clayton, attendance at last year's meeting in Washington was greater than in previous years. Two hundred and eight (208) ACGIH members registered, which is about one-third of our total membership. Our rebate on registration fees was $613.50. This is based on a full rebate of $5.00 for each ACGIH member only and $2.50 for those belonging to both organizations.

It appears that the Conference will be highly successful again this year. As many of you know, the success of these Conferences depends largely on the advance planning and work done by the many Conference committees. On behalf of ACGIH, I want to express our sincere appreciation to those who have worked hard to insure the success of this, our 25th Annual Meeting.

May I remind you, and also to get this statement into the Transactions, that next year's Conference will be held at the Sheraton Hotel in Philadelphia, April 26 to April 30, 1964. In 1965 we will meet at the Rice Hotel in Houston, Texas.

I hate to close with a tinge of sadness but I feel that this report should include mention of the loss to this organization because of Genny Plunkett's illness and retirement. She served this Conference faithfully for about six years. Not only did she handle practically all of the office routine, but she became extremely interested in the affairs of this Conference. Genny came to know many of our members through correspondence, through meeting visitors at 1014 Broadway in Cincinnati, and also meeting many of you at the two previous Conferences -- Detroit and Washington. Thus, her interests in this Conference were real and on many an occasion she prodded Pete Yaffe and me into getting certain matters completed. You will be pleased to know that the Executive Committee voted to send Genny a check for $200.00 in token of our appreciation for her services and interest in ACGIH. Pete Schall sent the check and a nice letter to her last month.

The future looks bright! Mrs. Marlene Schmidt has learned quite rapidly the office routine and she, too, is becoming a personal part of this organization.

This concludes the Secretary's report. If there are no questions, I will proceed with the Treasurer's report.

(No response.)

MR HOSEY: The report of the Treasurer is as follows:

Statement of Financial Transactions
Fiscal Year 4/1/62 to 3/31/63
American Conference of Governmental Industrial Hygienists

Cash Receipts	$
Sale of Analytical Methods (Published 1958 & Supplement 1961, Expensed 1958 & 1961)	315.80
Received from Ventilation Committee from Sale of Ventilation Manuals	4,928.00
Sale of Guide to Uniform Ind. Hyg. Codes or Regulations & Supplements	37.25
Sale of Guide to Health Services (Published & expensed 1960)	103.25
Sale of 1962 Transactions	105.00
Sale of Trade Names Index & Supplement (Published & expensed 1955. Supplement published and expensed 1959)	75.00
Sale of Air Sampling Instruments (Published & expensed 1960 and 1962 and reprints)	6,088.55

Cash Receipts (cont.)

Sale of Threshold Limits for 1962	$ 3,331.13	
Sale of Documentation for Threshold Limits (Published & expensed 1962)	1,750.74	
Sale of Process Flow Sheets & Air Pollution Controls (Published & expensed 1961)	35.00	
Membership Dues	1,656.90	
Share of Profit on 1962 American Industrial Hygiene Conference	613.50	
Advance Sale of Banquet Tickets - May 1963	195.00	
Refunds (from Committees - Postage)	10.86	
Total Cash Receipts		$ 19,245.98

Cash Disbursements

Travel and expenses for Secretary-Treasurer to 1962 Conference	169.53	
Travel and expenses for Mrs. Plunkett to 1962 Conference	149.63	
Miscellaneous 1962 Conference expenses - ACGIH Banquet, two Executive Committee dinners, stenotypists and gavels	422.85	
Miscellaneous 1963 Pre-Conference expenses	718.60	
Printing - Transactions and mailing	897.07	
Printing - Documentation of Threshold Limit Values	1,287.50	
Printing - Threshold Limit Values for 1962	1,409.04	
Printing - 1962 Membership Booklet	608.11	
Printing - Air Sampling Instruments Manual	5,225.15	
Mailing Cartons for Air Sampling Instruments Manual	96.31	
Advertising for Air Sampling Instruments Manual	691.88	
Printing - 5,150 Trade Names Index Cards and letterheads	31.83	
Stationery and mailing envelopes	376.74	
Copyrights	8.00	
Audit of Books	50.00	
Surety Bond for Secretary-Treasurer	62.50	
Committee meetings expense:		
Air Sampling Instruments $ 120.60		
Agricultural Health 436.54		
Threshold Limit Values 91.99		
ASA N-3 9.07	658.20	
Office Expense:		
Manpower Service, Inc. 237.81		
Miscellaneous 60.99		
Bank Charges .55	299.35	

Cash Disbursements (cont.)

Postage	$ 719.31	
Multilithing Bulletin Board, Addressing envelopes, mailing, and maintenance of membership list	262.17	
Rebates on publication receipts	39.26	
Total Cash Disbursements		$ 14,183.03
Excess Cash Receipts over Cash Disbursements		$ 5,062.95
Add: Cash Balance Checking Account 4/1/62		6,155.03
		$ 11,217.98
Deduct: Transfer to Savings Account (2/19/63)		4,000.00
Cash Balance in Checking Account 3/31/63 (The Provident Bank, Cincinnati, Ohio)		$ 7,217.98

Savings Accounts

Cash Balance Savings Account 4/1/62	$ 9,706.23
Cash Transfer from Checking Account 2/19/63	4,000.00
	$ 13,706.23
Interest Earned on Savings Accounts	293.35
Cash Balance Savings Accounts 3/31/63	$ 13,999.58

(The savings accounts consist of a certificate of deposit in Eagle Savings & Loan Co. of $9,000.00 and a savings account in the Provident Bank of $4,999.58.)

Total Cash Available 3/31/63	$ 21,217.56

AUDITOR'S CERTIFICATE

I have examined the Statement of Financial Transactions for the fiscal year 4/1/62 to 3/31/63 of the American Conference of Governmental Industrial Hygienists as submitted by the Secretary-Treasurer of the organization.

In my opinion the above statement presents correctly the financial transactions for the above organization for the period as stated.

/s/ Charles Gehler
Certified Public Accountant
1801 Carew Tower
Cincinnati 2, Ohio

CHAIRMAN SCHALL: Thank you, Andy. You have heard the report of the Secretary-Treasurer. Do I hear a motion to accept and approve the report?

DR. REINDOLLAR: I so move.

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Mr. Hosey, do you have a report of the Executive Committee?

MR. HOSEY: Yes sir, I do.

CHAIRMAN SCHALL: May we have that?

MR. HOSEY: The Executive Committee did not meet during the interval between the annual Conferences this past year. However, many important items of ACGIH business were handled through correspondence.

The Executive Committee met Sunday, May 5, 1963, from 9:00 A.M. until about 9:00 P.M. at the Sheraton-Gibson Hotel in Cincinnati. Dr. Cralley, the new Chairman-elect, and Dr. McCammon, the new member of the Executive Committee, attended this meeting. All members were present except Dr. Wilson. Dr. W. Clark Cooper was also invited to meet with us but he was unable to do so. The deliberations were lengthy, as usual, but many important decisions were reached. The most important of these were:

1. Thirty-five applications for membership in the Conference were approved. Sixteen additional applications are being reviewed by the Membership Screening Committee. (These were approved by the Executive Committee at the close of the second business session on Tuesday, May 7th.)

2. The matter of instituting honorary membership was discussed. It was agreed that those who retire permanently from governmental, university, or related employment, should be given honorary membership without dues, and with privileges of full membership. This matter will be referred to the Constitution and By-laws Committee since it would involve a change in our Constitution.

3. A program committee for 1964, chaired by Dr. Cralley, was appointed. Pending their acceptance, the members will be Forest Bumford, Col. Edward Dehne, Dr. Morris Kleinfeld, Dr. Curtis McCammon, Dr. Gordon Siegel, and Mrs. Jane Voscek.

4. Due to difficulties encountered in selling our publications through bookstores, it was agreed that no further such sales will be made. The Executive Committee recommends that the Industrial Ventilation Committee adopt this same policy.

5. The Executive Committee reviewed the 1962 Transactions, regarding a motion made by Dr. Fredrick that we establish a fixed fee for a package deal of all our publications. After due deliberation, the Committee decided this was not practical for many reasons.

6. ACGIH was invited to participate in the Odor Symposium to be held in New York in November, 1963. This Symposium will be sponsored by the New York Academy of Sciences and the American Society of Heating, Refrigerating, and Air Conditioning Engineers. It was agreed that we would publicize and promote the Symposium in issues of the Bulletin Board and send one ACGIH representative to the meeting. The representative, from the metropolitan New York area, will be

chosen later and his registration fee will be paid by ACGIH.

7. It was agreed that ACGIH would be represented at future meetings of the Forum of Occupational Health Educators. The Secretary-Treasurer, or Chairman-elect, was so designated.

8. Mr. William McQuary of the Public Health Service met with the Executive Committee to discuss a request for cooperation with the Conference of State Sanitary Engineers. It was agreed that Mr. Schall would reply to their letter and express our appreciation of a willingness to cooperate. It was further agreed that Mr. Schall would make an effort to attend their next meeting.

9. The Executive Committee delegated the Senior member of the members-at-large of the Executive Committee to express on behalf of ACGIH condolences to the families of deceased members.

CHAIRMAN SCHALL: Every year there is a lot of difficulty in getting the Committee reports out. There are twenty-three committees, plus the Ad Hoc and so forth, -- cooperation on other ASA, ASTM, and a few others. For a number of years we tried different ways to get this information to you. Years ago we used to be able to read these reports, there were only four or five. Well, this is entirely out of the question now. So what we did, we got enough copies of the reports from each of the committees, I think they were in by February 1st if I remember right, and they were mailed to each member of the Executive Committee who was instructed to read these. Then last night every one of these was discussed in great detail. In some cases we requested the committee chairman to meet with us and discuss certain portions of the report, and all of these reports will be printed in their entirety in the Transactions, but we now are going to give you the statements of the Executive Committee. And if any committee chairman wishes, he can have up to three minutes to discuss his report, not over that, and we think and we hope that a great number of you won't need any time at all.

I would like to say this, too. We sent this statement out about January, I believe of this year. I would like to remind -- this was to the chairmen of all standing committees. I would like to remind you again of expenses permitted for attendance at committee meetings. No one has been given nor will anyone be given blanket authority for paid travel to meetings. Only those can be reimbursed who have received prior approval for travel from the chairman or secretary-treasurer, and this should only be requested if the employer will not provide for the trip. Expenses allowed are intended to assist in cases of hardship. Your cooperation is greatly appreciated.

Did we state last year about the meeting in Baltimore and the minimum expenses that were approved?

MR. HOSEY: Well, to representatives on ASA and ASTM committees, we approved attendance at one such meeting a year with the cost not to exceed $200.00. Our own committee members should get prior approval but there is no set amount if my memory serves me correctly on the amount that can be spent. But prior approval must be obtained as Pete just indicated.

CHAIRMAN SCHALL: Shall we start now with the Agricultural Health.*

Report of Committee on Agricultural Health

A new chairman for this Committee was appointed in August, 1962. Thereafter, preparations were set in motion for a committee meeting. It was felt that it would be advantageous to the Committee for the meeting to be held at the Institute of Agricultural Medicine, University of Iowa. The meeting took place January 8-9, 1963, in accordance with the attached agenda, Appendix A.

A review of the organization, staffing and work under way at the Institute was made by the Committee. A seminar was held at which section chiefs reviewed the programs in their areas (see Appendix A). There was an address by the Director of the Institute, Professor Franklin H. Top, who had attended an ILO/WHO meeting on agricultural health in Geneva during April, 1962. Among other observations, Professor Top stressed the need for research into the underlying causes of accidents and ill health, pointing especially to the possible role of social and economic factors. Dr. Marshall Harris, of the University Agricultural Law Centre, at a special evening session, dealt with attitudes toward ownership in Iowa farming and the relation of such attitudes to agricultural health. It is desired to acknowledge the substantial aid which the Committee received in its deliberations from the staff of the Institute and Dr. Marshall Harris.

During the course of the year, the members of the Committee studied an extensive list of published material on the subject. This list is attached as Appendix B.

The primary work of the Committee has been to explore and investigate the health problems of agriculture and to this end, it has begun to compile a comprehensive picture on the subject. In the course of the work, the Committee reviewed significant developments during the year. It was felt that it would be helpful to the Conference and official agencies to have preliminary recommendations arising out of this review. The recommendations are presented in two groups. Those for the Conference follow directly in this text. The recommendation for official agencies begins on page 54.

Recommendations for the Conference

1. Recommendation Regarding Bibliographic Service in Agricultural Health.

The Committee has noted the wide diversity of publications carrying material on the subject of agricultural health and recognizes the value to official agencies in having up-to-date bibliographic information. Apart from a bibliography on toxicity of pesticides to man, published periodically by the World Health Organization, no other bibliographic summaries related to agricultural health appear to exist at the present time. The Committee therefore recommends that the Conference consider the advisability of requesting the United States Public Health Service to extend its present bibliographic coverage of other fields to include the subject of agricultural health. In particular there is a need for translation of foreign papers.

*Note: Committee reports were not read during the business meeting. They are included below in alphabetical order. Actions by the Executive Committee and Conference appear at the end of each report.

2. Recommendation for a Symposium on Agricultural Health.

In view of the increasing use of agricultural chemicals and the advancing mechanization in this field, the Committee considers that it would be advantageous for the Conference to hold a symposium on agricultural health in conjunction with the annual meeting in 1964. It is felt that such a symposium would provide the Committee and members of the Conference with an over-all view of the problem and in particular, with research being carried on in connection with special aspects of the subject.

3. Recommendation on Development of Research in Agricultural Health.

Its current study of health problems in this field has revealed to the Committee the need for general and specific industrial hygiene surveys on crop and animal production, as well as assessment of hazards in the use of agricultural machinery. In the case of pesticides, the Committee draws attention to the suggestions for further research made by the World Health Organization on p. 29, Technical Report Series #227, "Toxic Hazards of Pesticides in Man" to improve control of hazards arising from the use of pesticides. The Committee recommends that the Conference give consideration to the advisability of consulting with the United States Public Health Service and other pertinent agencies with a view to increasing support for investigation and research into agricultural health problems. In particular, there is a current need for research into safety and health factors in machine design and application of new chemicals, the underlying causes of farm accidents, and the role of attitudes and motivations as factors in the injury situations.

4. Recommendation on Continuing Program for the Committee.

Based upon an analysis of the various aspects of the agricultural health program which has been carried out by the Committee during the current year, the Committee recommends that the health problems of agriculture be examined by the Committee over the next two years in accordance with the plan set forth in Appendix C. Under this plan the Committee would periodically issue information and make recommendations concerning the nature of agricultural health programs which official agencies should consider as part of their occupational health responsibilities.

5. Recommendations on Agricultural Health for Official Agencies.

The Committee on Agricultural Health is engaged in compiling a comprehensive picture of the occupational aspects of agricultural health. In the course of this work, the Committee has reviewed developments during the past year. It was felt that it would be helpful to official agencies to have at this time comments and recommendations based on the review to date.

A. Recommendation on Report on Agricultural Health Problems in Agriculture, representing the Fourth Report of the Joint ILO/WHO Committee on Occupational Health 1962.

The Committee has reviewed this report issued from Geneva in late 1962 and commends the report to official agencies. It provides a general outline of

the problem under the following headings:

(1) Public Health Problems Related to Agricultural Work.

(2) Protection of Agricultural Workers Against Toxic Hazards.

(3) Protection of Agricultural Workers Against Occupational Diseases Arising from Viruses, Rickettsiae, Bacteria, Fungi, and Parasites.

(4) Organization of Occupational Health in Agriculture.

This report, WHO Technical Report Series #246, can be obtained from Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N.Y. at a cost of 60¢.

B. Recommendation on Report on Toxic Hazards of Pesticides to Man, Representing the Twelfth Report of the Expert Committee on Insecticides, World Health Organization, 1962.

The Committee has reviewed this report issued during 1962, and commends the report to official agencies. This is the second report on the subject prepared under the auspices of the Expert Committee on Insecticides of the World Health Organization, the previous report having been issued in 1956. The present report presents a comprehensive and up-to-date evaluation of the status of the problem of protecting the health of persons engaged in applying pesticides, especially in connection with public health control programs. Nevertheless, the material presented has a general application to the case of workers engaged in other occupations where pesticides are handled. The subject is dealt with under headings such as: (a) General precautions for all spray operators applying pesticides, (b) Clinical surveillance of operators, (c) Exposure of residents, (d) Accidents arising from exposure to insecticides and legislative control, (e) Information on pesticides and its distribution. The report closes with a set of conclusions and recommendations which should be of considerable value to official agencies in America.

C. Recommendation on Bibliography on Pesticides Toxicity and Accidental Poisoning and Information Circular on Toxicity of Pesticides to Man Published Periodically by Vector Control Division of Environmental Health, World Health Organization, Geneva.

These bibliographies and information circulars are issued at periodic intervals and provide an important source of information on the subject. It is recommended that official agencies bearing agricultural health responsibilites review these two publications.

D. Recommendation on Industrial Hygiene Aspects of Migratory Labor.

The Committee took note of the recent federal bill dealing with health services to migratory workers. Commenting on the bill, the New York Times in its issue of September 30, 1962, pointed out that the benefits of modern agricultural science are brought to bear diligently against the diseases of plants and livestock and that it is encouraging that at long last we have seen the

necessity for applying the same diligence in combating the diseases that kill and cripple those who harvest our food. The Committee recommends that those States having migratory labor problems examine particularly the industrial hygiene aspects of work by these migratory groups.

E. Recommendation on Environmental Sanitation in Agricultural Areas.

The Committee took note of the increasing recognition being given to pesticides, feed additives and veterinary pharmaceuticals as environmental hazards in relation to water and food sanitation. The Committee recommends that official agencies give continuing consideration to the disposition of these materials either in the unchanged state or as metabolites.

F. Recommendation on Accumulation of Field Experience on Agricultural Health.

The Committee has noted that frequently agencies other than health have direct responsibility for problems in this field. In view of this situation, the Committee recommends that health agencies develop wherever possible a close liaison with other agencies concerned, particularly with a view to accumulating information on field experience with toxic chemicals, farm machinery, and other potential agricultural hazards. The Committee would be greatly assisted if official agencies could forward brief reports of such information to the Committee.

G. Recommendation on Educational Material.

The Committee recommends that official agencies consider the developing need for adequate educational material on new aspects of health affecting agricultural workers. In particular, the Committee endorses the recent statement from the U. S. Department of Agriculture emphasizing the vital importance of reading and following safety directions on labels. Close liaison between health and other agencies would appear to be needed to inform users more effectively regarding safety and health factors in agricultural operations.

The Committee is agreed on the desirability of meeting at an early date in the South or West to establish contact with citrus and cotton problems in the field; to examine facilities for health protection and university centers having in mind promoting local seminars or causes on agricultural health.

APPENDIX A.

The first Meeting of the Committee on Agricultural Health, American Conference of Governmental Industrial Hygienists, was held in Iowa City, Iowa, January 8-9, 1963. Those present were: Dr. Kingsley Kay, Chairman, Clyde Berry, Paul Caplan, Donald Kurvink, and George Raschka. The following items were discussed:

1. Review of previous Committee activities.

2. Attend seminar at Institute of Agricultural Medicine, University of Iowa, given by Clyde Berry, Associate Director of the Institute; W. F. McCulloch, Chief, Infectious Diseases Section; Keith Long, Chief, Toxicology Section; and L. W. Knapp, Chief, Safety Section; Darrol Heggen, Chief, Statistics Section.

3. Discussion of the Report of the ILO/WHO session on Agricultural Health held in Geneva, Switzerland, April, 1962, including consultation with Professor Franklin H. Top, Director of the Institute who attended the session in Geneva.

4. Discussion of Twelfth Report of the Expert Committee on Insecticides - "Toxic Hazards of Pesticides to Man."

5. Films - Modern Mosquito Control and Prelude to Plenty, produced for American Cyanamid Company.

6. Pertinent legislation, including a discussion of the subject with Dr. Marshall Harris, Agricultural Law Center, University of Iowa.

7. Statistics related to hygiene and safety of agricultural occupations.

8. Survey of conditions in different branches of agriculture.

9. Research Aspects.

10. Proposals and Recommendation to A.C.G.I.H. including Work Program for the Committee.

APPENDIX B.

DOCUMENTS REVIEWED BY ACGIH COMMITTEE ON AGRICULTURAL HEALTH DURING 1962.

1. Occupational Health Problems in Agriculture - Fourth Report of the Joint ILO/WHO Committee on Occupational Health, WHO Technical Report Series No. 246, Geneva, 1962, price $0.60.

2. Toxic Hazards of Pesticides to Man - Twelfth Report of the Expert Committee on Insecticides, WHO Technical Report Series No. 227, Geneva, 1962, price $0.30.

3. Report of an Occupational Health Survey of Agricultural and Manufacturing Industries in South Dakota, Occupational and Radiological Health Section, Division of Sanitary Engineering, South Dakota State Department of Health, 1959.

4. Occupational Disease in California attributed to Pesticides and other Agricultural Chemicals, 1960, State of California, Department of Public Health, Bureau of Occupational Health, 2151 Berkeley Way, Berkeley, California, November, 1961.

5. Information Circular on the Toxicity of Pesticides to Man, No. 9: July, 1962, Vector Control, Division of Environmental Health, World Health Organization, Geneva.

6. Safety Orders for Agricultural Operations, November, 1961, State of California, Department of Industrial Relations, Division of Industrial Safety, 455 Golden Gate Avenue, San Francisco 2, California.

7. Agriculture (Field Machinery) Regulations, 1962, effective October 13, 1962, discussed in the Journal of the Royal Institute of Public Health and Hygiene, Vol. 25, p. 255, November, 1962.

8. Migrant Workers Care - Comments on the new federal bill covering health care for migrant workers - New York Times, Sunday, September 30, 1962.

9. New Campaign on Use of Pesticides Urged - Report of an address to the Chemical Specialties Manufacturers Association by Justus C. Ward, Director, Pesticides Regulation Division, U. S. Department of Agriculture - appeared in Chemical and Engineering News, Vol. 40, No. 50, page 24, December 10, 1962.

10. The New Masked Man in Agriculture - pesticides and the health of the agricultural users, Mary K. Farinholt, published and distributed by the National Consumers Committee for Research and Education Inc., Room 940, Engineers Building, Cleveland, Ohio.

11. Hazards from Occupational Disease on the Farm, Irma West, M.D., Bureau of Occupational Health, Department of Public Health, State of California - a paper presented at the 44th Annual Convention of the California Farm Bureau Federation, Rural Health Department Annual Conference, San Diego, November 14, 1962.

12. What do we know about farm injuries to young workers - Irma West, M.D., Bureau of Occupational Health, Department of Public Health, State of California - a paper presented at the 44th Annual Convention of the California Farm Bureau Federation, Rural Health Department Annual Conference, San Diego, November 14, 1962.

13. California Department of Public Health. Memorandum to Local Health Officers from Howard W. Mitchell, M.D., Chief, Bureau of Occupational Health, with Material Relating to Occupational Disease from Organophosphorous Pesticides, July 27, 1962. This included a statement reprinted from "California Medicine, May 1962, on the new law requiring medical supervision for California agricultural workers using organophosphorous insecticides; a new Bureau publication "Questions and Answers about Medical Supervision for Workers using Organic Phosphate Pesticides;" An information sheet about 2-PAM, the new experimental antidote for organophosphorous poisoning; accounts of two recent cases of parathion poisoning, one an occupational death; a list of laboratories in California prepared to carry out cholinesterase determinations; examples of local health department activities to help physicians and employers in the proper safety and medical supervision of workers using organic phosphate pesticides.

14. New Approaches to the Health Hazard Evaluation of Pesticides, Kingsley Kay, AMA Archives of Industrial Hygiene and Occupational Medicine, July 1953, Vol. 8, pp. 70-75.

15. Safety Factors in Equipment for Application of Highly Toxic Insecticides, Kingsley Kay, Canadian Journal of Public Health, July 1955, pp. 273-81.

APPENDIX B (cont.)

16. Comments of Senator Hubert Humphrey (D.-Minn.) on the quality of research on new drugs - from Chemical and Engineering News, Vol. 40, No. 50, pp. 19, Dec. 10, 1962.

17. Control of Health Hazards Likely to Arise from the Use of Organo-phosphorus Insecticides in Vector Control, J. M. Barnes, W. J. Hayes, and Kingsley Kay, Bull. World Health Organization, Vol. 16, pp. 41-61, 1957.

18. Silent Spring, Rachel L. Carson, Boston, Houghton Mifflin, Xiii, pp. 368, 1962.

19. Handbook of Toxicology, V. 3 Insecticides, edited by W. O. Negherbon, Philadelphia, W. B. Saunders Co., 1959, pp. 854; V. 5 Fungicides, edited by D. S. Dittmer, Philadelphia, W. B. Saunders Co., 1959, pp. 242.

20. Handbook of Agricultural Chemicals, W. L. Hanna, 2nd ed. 1958, pp. 493, available from the author, Route 1, Box 210, Forest Grove, Oregon.

APPENDIX C

Outline of Program for Exploring and Investigating The Agricultural Health Program.

Technical Background

1. Distribution of Agricultural Occupations and Industries.

2. Legislation and Administration of Regulation.

3. Incidence of Ill-Health, Compensation Alternates.

4. Consultation with Specialists and Associations.

Survey of Agricultural Operations

Examples: (1) Citrus fruit, (2) Grain, (3) Corn, (4) Cotton, (5) Vegetables, (6) Palm, (7) Pineapple, (8) Tobacco, (9) Rice, (10) Cane sugar.

Hazards and Hygiene Problems in Agriculture

1. Hours and work load.

2. Toxic hazards, systemic, respiratory, and dermal.

3. Biological hazards.

4. Machine hazards (traumatic).

5. Physical hazards (climate, vibration, noise, etc.).

APPENDIX C (cont.)

Protective Measures

1. Machine Design.

2. Personal Protective Equipment.

3. Personal Hygiene.

4. Operator Qualifications.

Organization of Industrial Hygiene in Agriculture

1. Migratory and Seasonal Worker Problems.

2. Engineering, Medical, and Chemical Services.

3. Educational Techniques and Material.

4. Statistical Service.

5. Compensatory Aspects - Insurance Schemes.

Respectfully submitted,

Dr. Kingsley Kay, Chairman
Donald Kurvink
George J. Raschka

Dr. Clyde M. Berry
Paul E. Caplan
Robert Diakun

MR. HOSEY: Mr. Chairman, with the following modifications, I move that the Conference adopt this report.

(The report of the Committee on Agricultural Health was accepted following a discussion by its Chairman, Dr. Kingsley Kay. The Committee was commended for its actions.

1. Recommendation #1 of the report was approved. This was a request directed to the PHS to extend its present bibliographic coverage to include agricultural health.

2. Recommendation #2 - it was agreed to refer the proposal for a Symposium to be held on agricultural health to the Program Chairman for 1964.

3. Recommendation #3 - it was suggested that the Committee on Agricultural Health consult with the PHS on increased support for research in agricultural health.

4. Recommendation #4 - it was agreed that the Committee continue to examine the health problems of agriculture as outlined in Appendix C of the report. It was further agreed that this Conference would act as a co-spon-

sor with the University of Oklahoma on a proposed course on occupational health aspects of pesticides provided no cost to ACGIH is involved. The Committee disapproved an Addendum to Recommendation #4 which requested the sum of $1,500 for Committee travel during the year.

5. The Committee on Agricultural Health proposed recommendations on agricultural health for official agencies. The Executive Committee agreed that this was a valuable contribution. These seven recommendations, in some detail, are included in the Transactions above.

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: We will now ask Dr. Kay if he wishes to comment. Dr. Kay, do you wish to make any comments at this time?

DR. KAY: No, I have no comments.

CHAIRMAN SCHALL: I would like to say just one thing. The philosophy of the Executive Committee, when a new committee is appointed is to be a little more lenient to allow them to have one meeting a year to get together to get the program off the ground, and then after that they get a little miserly. Hence, the grant was not made for funds.

Report of the Committee on Air Pollution

In addition to preparation of air pollution process flow diagrams which indicate sources of pollution and methods of control for specific manufacturing processes, the Committee has also given consideration to taking up other projects such as the listing of ambient air quality standards, the preparation of a model air pollution ordinance and the preparation of a current listing of methods for estimating air pollution emissions. However, the Committee has concluded that its efforts can best be directed toward the preparation of process flow diagrams which in themselves require a considerable amount of effort.

To date flow diagrams on asphalt plant operations, cement manufacture, gray iron and malleable foundry operations and asbestos milling operations have been completed with the first three published in ACGIH Transactions. (See Appendix "A".)

Nearing completion and to be submitted to the ACGIH within the next few months are additional flow diagrams on alfalfa dehydration, cotton gin operation, rendering plant (inedible) operations and the application of catalytic combustion or direct incineration equipment to paint bake ovens, kettle processing and wire enameling ovens.

In addition, the following process flow diagrams have been scheduled for completion at a later date: (1) Refining of waste oils; (2) manufacture of edible oils; (3) grain elevator operations; (4) sewage treatment plant; (5) steel manufacture; (6) coffee roasting; (7) superphosphate fertilizer manufacture; (8) pulp and paper manufacture; (9) power generation facility (oil and coal); (10) non-ferrous foundries; (11) steel barrel burnout operation; (12) a diagram indicating nomenclature on boilers and procedure for properly burning coal and oil.

As in the past, the Committee welcomes suggestions from the Conference membership on all matters concerning its activities and projects.

Respectfully submitted,

Bernard D. Bloomfield, Chairman
Jean J. Schueneman
Raymond Smith
Jack A. Wunderle

C. Fred Berghout
Otto Paganini
Martin L. Sanvito

MR. HOSEY: I move the adoption of this report with the following action by the Executive Committee.

(The report of the Committee on Air Pollution was accepted and its adoption is recommended. It was agreed, however, that the Air Pollution process flow diagrams as submitted would be included in the Transactions but additional copies would not be reproduced for sale separately.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Bernie Bloomfield, do you want to make a statement on this? (No response.) I guess not.

Report of the Committee on Air Sampling Instruments

The Air Sampling Instruments Committee completed its work during the year on the second edition of the Air Sampling Instruments Manual. The new books were received from the publisher in July of 1962. A total of 1,500 copies of this manual were ordered with 250 of these manuals having hard-bound covers. The sale of the new manual has been very encouraging with a total sales through January 31, 1963, amounting to 504 copies. The sale of the hard-bound edition proved to be more popular than anticipated, and an order for binding an additional 200 copies has been placed.

Information received from the Secretary-Treasurer of ACGIH indicates that the total receipts from sales of the manual during the fiscal year through March 31 amounts to $6,088.55. Of this amount, $440.62 was received from sales of the first edition of the manual.

Orders for reprints of various sections of the manual were received from nineteen authors or companies. Total orders to date amount to $967.00 at a cost for publishing of $541.30. On this basis a net profit of $425.70 is anticipated.

The total amount expended by the Committee for printing and advertising this second edition of the manual amounts to $6,013.00. It can be noted from the above information that the Committee project has paid its own way, and we can anticipate a modest profit in the future from the sale of the remaining copies on hand.

The Committee met in January 1963 to review its plans and to consider future activities of the Committee. After considering the sales experience with the first edition and the second edition, it was determined that a target date for republication of the manual should be set for July or 1964. The Committee made initial assignments toward this end while continuing its efforts to promote and sell the present edition of the manual.

The Committee considers the second edition to be a distinct improvement over the first edition, and it is hoped that continued improvement can be achieved as this project is carried forward. Additional sections on other subjects, including biological samplers, are being considered at this time.

The preceding Committee Chairman, Mort Lippmann, who was primarily responsible for organizing and editing the second edition, resigned his chairmanship during the year when he accepted employment in a position outside the government area. We wish to recognize his efforts and acknowledge the great amount of work accomplished by him which made publication of the second edition possible.

FINANCIAL STATEMENT
AIR SAMPLING INSTRUMENTS COMMITTEE

Receipts from 1st edition--1960-61, 1961-62	$ 5,592.40
Receipts from 1st edition--1962-63	440.62
Receipts from 2nd edition--1962-63	5,647.93
Receipts from reprints, 2nd edition	967.00
	$ 12,647.95
Expenses for printing and advertising 1st edition	$ 3,503.68
Expenses for printing and advertising 2nd edition	6,013.00
Expenses for reprints, 2nd edition	541.30
Postage, miscellaneous Committee expenses	
	$ 10,057.98
Net difference	$ 2,589.97*

*Less postage and miscellaneous Committee expenses

Respectfully submitted,

Irving H. Davis, Chairman

Paul Caplan
Herbert H. Jones
Francis Jung
Howard L. Kusnetz
Victor Lavetter
Robert L. Mitchell
Dr. Bernard E. Saltzman
Grant H. Vance

MR. HOSEY: I move the report be adopted with the following comments by the Executive Committee.

(The report of the Committee on Air Sampling Instruments was accepted and its adoption is recommended. Mr. Irving Davis requested that he be relieved as Chairman of this Committee. Mr. Herbert Jones agreed to assume the Chairmanship for the coming year. The Chairman of ACGIH will at a later date express our appreciation to the two previous Chairmen of this Committee for their splendid accomplishments.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Mr. Davis, do you wish to make any comments?

MR. DAVIS: I wish to ask the question: In a letter to you, Andy, I outlined what I thought would be the expenses for the Committee for the coming year. Was this discussed, and --

MR. HOSEY: Apparently it wasn't.

MR. DAVIS: I suggest we move on then.

MR. HOSEY: Well, apparently in our rush of last night I didn't see it. I don't have it. What is it?

MR. DAVIS: Let me talk with you later about it.

(The Executive Committee approved his request for $650.00 for advertising, $300.00 for travel, and $20.00 for postage on May 7, 1963.)

CHAIRMAN SCHALL: What do you want, next, Awards?

MR. HOSEY: Yes.

Report of the Committee on Awards

A majority of the Awards Committee decided to bestow the 1963 Meritorious Award on Mr. George Hama. The citation is presented below.

> The man we are proud to honor today has been a tireless and conscientious worker in Occupational Health. He has been especially active in the field of ventilation and in recent years his interest was focused chiefly on the control of carbon monoxide.
>
> With the growth of automatic transportation as we are all fully aware, and the catacombing of our cities with underground garages, the problem of carbon monoxide has been greatly intensified in recent years. The difficulty of intermittent exposure has resisted efforts for satisfactory control, and standards have consequently been lacking. George Hama's work in developing a method of predicting in advance the amount of ventilation per parking place for both routine parking and passenger load parking is thus a pioneering effort. The ventilation requirements which he has helped to set forth are such that can be brought into the building design of new garages.
>
> George Hama has also concerned himself with the broader public health problem of carbon monoxide for space heaters. His original work on installation requirements for non-vented gas-fired make-up heaters and for infrared space heaters represents a distinct contribution to the control of this hazard.
>
> And we also want to recognize, George, your sustained, dedicated service that you have given to the Ventilation Committee. Although the membership of this committee has been fluid throughout the years, George has served continuously for many years as an enthusiastic, devoted member.

For these accomplishments as well as your keen, unflagging devotion to the furtherance of occupational health, we are proud to present to you the ACGIH Award. However, there is a hitch to it. The Award is in the making and all I can say is, here is a promise that you will get it. (Applause.)

Respectfully submitted,

Jack Baliff, Chairman
Dr. Hervey B. Elkins
Miss Elizabeth A Neubert
Dr. Thomas F. Mancuso
Dr. Irma M. West

MR. HOSEY: I move the adoption of this report with the following comments of the Executive Committee.

(The report of the Committee on Awards was accepted and the Award was presented to Mr. George Hama during the second business session on Tuesday. The Chairman of the Awards Committee suggested that nominations for Awards should be received from the membership no later than February 1, for the Award to be given in the Spring of that same year. The Executive Committee agreed that an Award should not be presented to anyone unless the Committees' choice was unanimous or that there is no more than one dissenting vote.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: It is carried. And Mr. Baliff is not here to comment.

MR. HOSEY: The next one is very brief.

Report of the Committee on Constitution and By-Laws

This Committee has no action to recommend by the membership at this time. There has been no Committee meeting during the year. All business of necessity has been done by mail.

Some progress in study by the Chairman has been possible but more than the two Committee members will be urged to submit results of their studies and considerations of the present Constitution and By-Laws.

It is recommended that the Committee, as currently constituted, be continued.

Respectfully submitted,

William L. Wilson, M.D., Chairman
Joseph E. Flanagan, Jr.
Dr. H. K. Sessions
Miss Edna May Klutas
Dr. Ralph R. Sullivan
Dr. Samuel Moskowitz
George E. Tubich

MR. HOSEY: The report of the Committee on Constitution and By-Laws was accepted by the Executive Committee and its adoption is recommended. I so move.

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: It is adopted. I guess there is no cause for comment.

MR. HOSEY: No report was received from the Committee on Epidemiology of Occupational Disease. The Executive Committee agreed that this important committee should be continued with a change in chairmanship. I so move that this be accomplished.

(The motion, having been duly seconded, was put to a vote and carried.)

MR. HOSEY: I don't think the present chairman is here, anyway.

Report of the Committee on Evaluation of Dust Exposure and Effects Upon Exposed Workers

The Committee recommends:

1. That the Committee be more appropriately entitled Committee on Environmental Factors in the Pneumoconioses.

2. A Bill of Particulars as follows:

   The function of this Committee shall be to:

   a) Establish criteria for evaluating environmental factors in the control and prevention of the pneumoconioses.

   b) Bring together international authorities to discuss these environmental factors and ultimately establish standards for the measurement and evaluation of these factors.

If approved by the Executive Committee and the Conference this Committee will promptly approach the proper international body to call together a group of experts to outline the problem and set the stage for an international meeting.

In our opinion there are four main factors in the pneumoconioses which should be considered according to industry. These are:

1. The diseases.

2. Etiological factors.

3. Measuring the environment.

4. Standards of exposure.

The Committee will suggest a conference of about two weeks' duration with morning sessions devoted to scientific papers and afternoon sessions open for discussions.

Budget:

ACGIH funds for the coming year are not requested.

Respectfully submitted,

Harry B. Ashe, Chairman
William McQuary
John Soet

E. J. Baier
Allan L. Coleman
Dr. Hervey B. Elkins

MR. HOSEY: With the following corrections by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Evaluation of Dust Exposures and Effects upon Exposed Workers was accepted with appreciation. The Executive Committee agreed to change the name of the Committee to: 'Committee on Environmental Factors in the Pneumoconioses; however, the Committee did not agree to the Bill of Particulars as submitted nor to the four mandates outlined in the report. A Bill of Particulars will be prepared by Dr. Einert for approval by the Executive Committee and the concurrence of the Committee on Environmental Factors in the Pneumoconioses. The Executive Committee will also meet with this Committee to clarify the four mandates.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: It is carried, Harry Ashe, do you wish to talk on this?

MR. ASHE: No.

Report of Committee on Industrial Codes and Regulations

Prior to the Twenty-Fourth Annual Meeting of the ACGIH in Washington, D.C., in 1962, the Industrial Hygiene Codes and Regulations Committee completed a draft of a proposed regulation, "A Guide for Uniform Industrial Hygiene Codes or Regulations for Coin-Operated Dry Cleaning Establishments." This document was reviewed by representatives of the National Automatic Laundry Council and was submitted to the Executive Committee of ACGIH for adoption.

At the Annual Meeting, the proposed regulation was accepted "in principle" by the Executive Committee and was referred to the membership for comment. The deadline for comment was November 1, 1962, and those received during the interim concerned air pollution aspects and specific ventilation rates. These points were considered by the Committee, and compromise measures were incorporated into the draft. The amended draft has been sent to the ACGIH Chairman for final adoption.

During this waiting period, the Committee reviewed the huge document, "Industrial Hygiene Codes and Regulations" for possible updating. Because of the many changes which had developed in the dynamic field of industrial hygiene, a complete rewrite of the document became necessary. We then learned that an American Standards Association Z-62 Committee (industrial hygiene standards) had undertaken this work, and this project was shelved. We will follow the activities of the Z-62 Committee and may resume the rewrite of the document if no action is taken by ASA.

The Committee is currently engaged in the drafting of a proposed guide for clean rooms. Although a considerable amount of literature has developed in this area, most of it is product oriented. We hope to prepare a guide oriented toward the clean room occupant, insofar as health and hygiene are concerned. This guide

will require several months to draft in final form for submission. We are working with a standing committee of the American Association for Contamination Control, devoted to the study of governmental rules and regulations concerning clean rooms, for this project.

Respectfully submitted,

E. J. Baier, Chairman

C. Fred Berghout
Robert L. Harris, Jr.
Carl Jensen
Louis J. Proulx

MR. HOSEY: With the following comments by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Industrial Hygiene Codes and Regulations was accepted with thanks and its adoption is recommended. Mr. Baier, Chairman of this Committee, discussed the few minor revisions which were made during the year to the proposed code as printed in the 1962 Transactions. The Executive Committee recommends that the revised code be published in the Transactions and that two hundred additional copies be reproduced for sale at 25¢ each. A request was received from the Division of Environmental Engineering and Food Protection in the Public Health Service suggesting a concurrent adoption by the PHS of the code on coin-operated dry cleaning establishments. This was discussed at considerable length and Dr. Einert agreed to reply to this request inviting the PHS to endorse this code if they so desire.)

(The motion, having been duly seconded, was put to a vote and carried.) (The Code appears on pages 99, 100, 101, and 102.

CHAIRMAN SCHALL: Does Ed want to make a comment?

MR. BAIER: I just hope this ends it so I can move around my office when I put away this correspondence.

Report of the Committee on Industrial Hygiene Records and Reports

While Mrs. Worden was Chairman of the Committee, she succeeded through correspondence in bringing about considerable interchange of ideas on what future work the Committee might undertake. A suggestion she and some of the others thought might develop into something useful was that consideration be given to the preparation of a Guide to Records and Reports for Evaluating Environmental Conditions in Industry.

This proposal seemed to stand up pretty well when one examined the Bill of Particulars against Committee accomplishments in past years. These include:

a. Plan for Standard Reports of Occupational Health Activities Among State and Local Agencies (Revised April 1958).

b. Guide to Records for Health Services in Small Industries (Copyright 1960).

This leaves one segment of the Bill essentially untouched, namely "..... standard systems of records and reports for the evaluation of ..... environmental conditions in industry." The proposed guide would therefore come within the scope of the Bill of Particulars. As a result, an initial draft of little more than an outline of such a guide has been prepared, a copy of which is attached. The members of the committee were recently furnished copies with the suggestion that it serve as a basis for discussion, perhaps during the forthcoming meeting in Cincinnati. It would also be useful to have some expression from the Executive Committee regarding the advisability of proceeding further with this effort.

It it appears that this is the type of guide ACGIH might develop, I would be willing to continue for another year as chairman, with any of the present members of the committee who might care to serve.

Respectfully submitted,

Robert H. Duguid, M.D., Chairman
Jane W. Voscek
Eloise T. Worden

Philip C. Hill
Edna May Klutas
Dr. Ralph Sullivan

MR. HOSEY: With the following comments by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Industrial Hygiene Records and Reports was accepted with thanks for a job well done and its adoption is recommended. The Committee will be advised to proceed with the development of the proposed "Guide to Records and Reports for Evaluating Environmental Conditions in Industry.")

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Dr. Duguid, do you wish to make any comment?

DR. DUGUID: No comment.

Report of Committee on Industrial Ventilation

Your Committee is pleased to report that this has been a successful year and distribution of Industrial Ventilation has continued at a brisk pace. During the year it has been necessary to reprint the 7th Edition of the Manual in order to satisfy the continuing demand; at the same time the Committee is proceeding with plans for revision and improvement of the Manual, looking forward to the publication of the 8th Edition early in 1964.

Individual sales of the Manual in this fiscal year were the highest in our history and indicate the acceptance of the book by all persons interested in and vitally concerned with industrial ventilation. Total sales of the Manual have declined somewhat from our peak year of 1961-1962; this reflects the importance of bulk distribution of the book to such organizations as the Sheet Metal Contractors Association and similar groups. As noted in our previous annual report we enjoyed such sales in both 1960 and 1961. The Committee welcomes such opportunities to distribute the Manual since it makes it possible to place this information in a greater number of hands and we encourage all members of the Conference to promote the distribution of the book in this manner wherever possible in addition to continuing your fine support of the Committee.

During the past fiscal year proceeds of $4,912.00 from the sale of the Manual have been forwarded to your Secretary-Treasurer and with this report we have forwarded an additional sum of $760.00 as a good start on Fiscal Year 1963-1964.

During the past year one of our Committee members, Mr. Jose Beltran of Venezuela, has begun work on the translation of the Manual into the Spanish language for future distribution in Latin America. We are continuing to press this work and as soon as the material is available distribution will be begin.

Attached to this report is a certified audit of our Committee accounts. Regarding the bookstore accounts; these have been difficult for us in the past and we hope to reselve the problem in the future. Our statement of Assets, Liabilities and Net Worth shows a Balance of $11,466.17 for the year.

We trust that the Conference will find that the Committee has been carrying out our charge in an effective manner. We will appreciate suggestions for further improvement of the book.

Respectfully submitted,

James C. Barrett, Chairman
John Lumsden
Marvin M. Schuman

Howard E. Ayer
Jose Luis Beltran
George Hama

Committee on Industrial Ventilation
Statement of Assets, Liabilities and Net Worth
March 31, 1963

Assets

Cash:		
Cash in Bank	$ 3,457.42	
Savings account	2,315.00	$ 5,772.42
Accounts Receivable:		
Current	1,947.50	
Over 30 days	--	1,947.50
Inventory:		
Paper	--	
Cloth	3,523.20	
Calculation sheets	75.00	
Packing Materials	225.00	3,823.20
Total Assets		$ 11,543.12

Liabilities and Net Worth

Accounts Payable:		
Withholding taxes payable		$ 76.95
Net Worth:		
Balance, April 1, 1962	$ 12,511.30	
Decrease for the year	1,045.13	
Balance, March 31, 1963		11,466.17
		$ 11,543.12
Sales of "Industrial Ventilation" and calculation sheets		$ 12,762.41
Cost of Materials sold		4,785.64
Gross Profit		7,976.76
Expenses:		
Secretarial	$ 1,677.01	
Advertising	766.50	
Postage	836.90	
Committee Expense	481.73	
Office supplies and expense	313.99	
Accounting and other contract services	127.25	
Refunds	18.55	4,221.93
		3,754.83
Accumulated Interest income on savings account		112.04
		3,866.87
Remitted to ACGIH		4,912.00
Decrease in net worth		$ (1,045.13)

MR. HOSEY: With the following comment by the Executive Committee, I move that this report be accepted.

(The report of the Committee on Industrial Ventilation was accepted with appreciation and its adoption is recommended.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Jim Barrett, do you wish to make any statement?

MR. BARRETT: I'll just make a comment, referring back to the Secretary's report, I'd like to assure the Conference that we know exactly how many Manuals we sell every year. Unfortunately the tally was not forwarded to me from the office or else it was lost in the mail.

Regarding the bookstores, our Committee was instrumental in bringing this up, our principal difficulty has been that they don't like to pay for the books, and then after holding them unpaid for, for a length of time they like to try to send them back. And we will certainly work this out with the instructions of the Executive Committee. The only problem we may have is in foreign sales, we have a fair number of these, and because of currency exchange many of the customers there seem to like to work through bookstores. But I am sure this can be worked out.

CHAIRMAN SCHALL: Thank you.

Report of Committee on Ionizing Radiation

The Committee on Ionizing Radiation undertook two projects during the year:

1. "Selected Bibliography of Radiation Protection Organizations"

   The Committee undertook the preparation of a "Selected Bibliography of Radiation Protection Organizations," and a final draft of the report was completed in early April. It has now been sent to the publisher and should be available on sale by May 15, 1963. (Note: The Bibliography is now available from the Secretary-Treasurer. The cost is $2.00 per copy.)

2. "Radiation Activities of ACGIH Membership"

   As a guide to the future program of the Committee on Ionizing Radiation, a Questionnaire was distributed to the ACGIH membership to determine the extent of their current radiation protection activities. The results of the survey have been evaluated and a summary report is attached.

Summary of Radiological Health Activities of the Members of the American Conference of Governmental Industrial Hygienists

Introduction

In November, 1962, a questionnaire was distributed to solicit information on the radiological health activities of the membership of the American Conference of Governmental Industrial Hygienists. Its purpose was to obtain background information to guide the future course of action of the Committee on Ionizing Radiation and, indeed, to determine if the Committee itself were needed.

Survey Results

Pertinent data brought out by the survey are summarized below:

1. Questionnaires were distributed to the entire membership (595).

   a. Of these, 273 (46%) replied. Included in these were representatives of health agencies in 35 different States.

b. Of the 273 replying, 170 indicated they had responsibilities in radiological health. This represents 62% of those replying, or 30% of the total membership.

c. Approximately 85% (233) of those replying indicated they were part of the agency having primary responsibility for radiological health.

2. The 170 having radiation protection responsibilities:

a. Estimated they spend an average of 35% of their time on radiological health. This is divided about equally between administrative (54%) and technical duties (46%).

b. Of these, less than one third (i.e., 51) belong to a Radiation Protection Organization such as the Health Physics Society.

c. Of the 170, 119 indicated they supervised other professional radiation protection personnel. The number of such personnel was about 1,000.

3. Of the 1,000 subordinate radiological health personnel, only 142 are currently members of ACGIH.

a. These 142 people devote an average of 58% of their time to radiological health.

b. The approximately 850 subordinate radiological health personnel, who are not members of ACGIH, devote an average of 61% of their time to radiation protection activities.

c. Yet only 123 (14%) of the 850 belong to a professional radiological health organization.

d. Where recruitment is needed is shown by the fact that:

(1) Of 28 subordinates working in colleges and universities, none are members of ACGIH.

(2) Of 311 subordinates working at the State and local level, only 28% are members of ACGIH.

(3) Of the 611 subordinates working at the Federal level (Military and Governmental Agencies), only 6% are members of ACGIH.

Conclusions

1. There is no question as to the need for a Committee on Ionizing Radiation within ACGIH. This is clearly indicated by the fact that:

a. Of those replying to the questionnaire, 62% have radiological health responsibilities and are devoting an average of 35% of their time to radiation protection;

b. Of the remaining 850 subordinate personnel (who are not ACGIH members), less than 15% are members of any Radiation Protection Organization, whatsoever.

Respectfully submitted,

Dr. Dade W. Moeller, Chairman
Col. Francis W. Lanard
Julian Olishifski
Donald P. Roberts

Howard E. Chaney
Charles L. Cheever
P. W. Jacoe
Byron Keene

MR. HOSEY: With the following comment by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Ionizing Radiation was accepted and its adoption is recommended. This Committee was very active during the year and one of the results of its efforts is the new "Selected Bibliography of Radiation Protection Organizations" which is now available from the Secretary-Treasurer.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Dr. Moeller, do you wish to say anything?

MR. HOSEY: He is not here.

Report of Committee on Membership Screening

Through the past year the Membership Screening Committee approved 43 applicants for full membership and 5 applicants for associate membership and requested additional information on 6 applicants before taking final action. It is evident from this year's experience that our present system of screening applicants is cumbersome and unsatisfactory due to the necessity of sending the applications to all members of the Committee for their individual decisions. It is our opinion that this process can be handled more effectively by having a meeting of the Screening Committee once a year at the time of the annual meeting to pass on all applications received by the Secretary during the year.

The Committee has been asked to comment on a report of the Ad Hoc Committee on Membership which recommended that the two classes of membership be continued -- that is, full membership and associate membership. In general we approve of the report of this Committee; however, the report also states that time devoted to industrial hygiene should not be a factor in full membership. We cannot entirely agree with this statement. We believe that this would allow full membership to any government employee who ever squeezed a carbon monoxide indicator bulb. We are of the opinion that full membership should be given only to those people who have some continuing responsible activity in industrial hygiene.

Respectfully submitted,

John C. Soet, Chairman
Edna May Klutas
Victoria M. Trasko

Col. Edward J. Dehne
Dr. William G. Fredrick
Robert G. Keenan

MR. HOSEY: With the following comment by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Membership Screening was accepted with thanks and its adoption is recommended. At the suggestion of the Chairman, John Soet, the Executive Committee agreed to disband the Membership Screening Committee. While this Committee did an excellent job, it was believed that the Executive Committee can handle membership applications in a more efficient manner.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: John Soet, do you wish to say anything?

MR. SOET: No comment.

Report of Committee on Recommended Analytical Methods

During the past year the Committee has reviewed and approved two additional methods: (1) "Determination of Composition of Solvents" refereed by D. E. Van Farowe and (2) "The USPHS Method for the Determination of Lead in Air and in Biological Materials" refereed by R. G. Keenan. These methods are being edited and will be distributed within the next few weeks.

The collaborative testing of separate methods for antimony, iron, and fluorides in air has been preceeding at a brisk pace. The report on the results of the evaluation of the method for antimony is being prepared by Mr. J. L. Monkman, the referee for this substance. Reports on the testing of the methods for iron and or fluorides are expected shortly, according to information received from the referees for these substances, Mr. L. Dubois for iron and Mr. T. Teichman for fluorides.

Recommendation of the USPHS method for lead has provided a well-tested procedure for the determination of lead in biological materials, using a mixed-color, double extraction dithizone method. The solvents method was organized as a scheme of physical tests to bring to the industrial hygiene chemist a degree of order to the involved series of tests often required to complete the analysis of complex solvent mixtures. The collaborative testing of the method for solvent analysis was started several years ago before vapor phase chromatography enjoyed the widespread use which it does at the present time. However, we believe the approved method for solvents will prove to be helpful even to those chemists who are working with a chromatograph by providing valuable information on the characterization, approximate estimations, and classification of the components of complex mixtures. The approval of the lead and solvents methods makes a total of 14 currently recommended methods.

The Committee is particularly anxious to accomplish the approval of the first 20 methods so that our organization's commitment to purchasers of the Manual of Analytical Methods may be met. However, the members of this Committee are well aware that a number of collaborators are working on more than one method to provide the essential performance data required by our Committee for the evaluation of a method. In this respect, the industrial hygiene methods recommended by this Committee have been unique. Because of the soundness of this approach we believe at the referee--collaborator testing system must be supported strongly to enable

us to continue to provide critically tested procedures for our members. Hence, we urge those of you who are administering industrial hygiene programs to consider this method of development and testing as a necessary and important function of your organization's activities and to encourage your chemists to allot a definite percentage of their time to this referee--collaborator testing program.

Respectfully submitted,

Robert G. Keenan, Chairman
Harry E. Jaworski
John L. Monkman
Martin W. Jeremias
Leonard D. Pagnotto

MR. HOSEY: With the following comments by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Recommended Analytical Methods was accepted and its adoption was recommended. Robert G. Keenan, who has been Chairman of this Committee for many years, requested that John L. Monkman assume the Chairmanship. The Executive Committee agreed to this change.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Do you wish to say anything, Mr. Keenan?

MR. KEENAN: No comment.

Report of Committee on Standard Labeling Procedures

This Committee has been relatively inactive during the past year. It is still awaiting action by the Ad Hoc Committee on Legislation and by the membership of the Conference so that this Committee will know how far it can go in sponsoring labeling legislation in the various states and local administrations.

The New York State Department of Labor's Committee on Code Development has requested and has received a draft for a proposed Industrial Code Rule on the labeling of hazardous industrial materials. This draft of a proposed rule is based on the Proposed Guide on Labeling of Hazardous Materials which was prepared by our Committee.

This Committee does not anticipate requiring any expenditures other than mailing for the coming year.

Respectfully submitted,

Samuel Moskowitz, Ph.D., Chairman
Dr. H. B. Elkins
John Soet
Joseph E. Flanagan, Jr.
Dr. Herbert E. Stokinger
Dr. Kingsley Kay

MR. HOSEY: With the following comments by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Standard Labeling Procedures was accepted and its adoption recommended. Dr. Sam Moskowitz asked to be relieved as Chairman of the Committee and that Dr. Hervey B. Elkins be appointed to that post.)

(The motion, having been duly seconded, was put to a vote and carried.)

DR. MOSKOWITZ: Not a thing to say.

Report of the Committee on Threshold Limit Values

The plenary committee met twice during the year, once in Washington in November, 1962, and again in New York City in January, 1963, this time in a joint meeting with the Z-37 Committee of the American Standards Association. The purpose of the latter joint meeting was to resolve the undesirable situation which has arisen as a result of the change in the definition of the MAC's that resulted in ambiguous limits. It was the consensus at the meeting that in the future when the Z-37 Committee prepares a standard, both the long and short-term effects will be given consideration and any number or value given in the Z-37 standard should be properly defined to show whether it represents a time-weighted average or whether the value should be considered a ceiling value. Analogously, the Threshold Limits Committee will designate certain limits as ceiling limits where appropriate. This in effect resolves past difficulties.

The 1963 list will contain several revisions and additions, as well as changes in the preface. Additional appendices will be inserted, one having to do with the threshold limit values of mixtures. Continuing the recently established custom (1961) no new substances are added to the tentative list until it is backed by a documented justification. Similarly, no revisions will appear in the 1963 list until appropriate changes have been made in the justifications to indicate the reason for the revision. Copies of the revised or new justifications are available on request. In due course they will be incorporated in a revised edition of the "Documentation of Threshold Limit Values."

REVISED OR ADDED RECOMMENDED VALUES FOR 1963

Substance	ppm*	Approx. Mg/M^3**
Acrolein	0.1	0.25
Allyl chloride	1	3
Ammonia	50	35
Amyl Acetate	100	525
C-Diglycidyl ether	0.5	2.8
C-Ethyl mercaptan	20	52
sec-Hexyl acetate	50	295
Methyl chloroform	350	1,900
C-Methyl mercaptan	20	40
Phosphine	0.3	0.4

* Parts of vapor or gas per million parts of air by volume at 25°C. and 760 mm. Hg pressure.

** Approximate milligrams of particulate per cubic meter of air.

REVISED OR ADDED TENTATIVE VALUES FOR 1963

Substance	ppm*	Approx. Mg/M^3**
Calcium oxide	-	5
Camphor	-	2
Copper Fume	-	0.1
Dusts & Mists	-	1.0
Demeton R (Systox)	-	0.1
Endrin - Skin	-	0.1
Ethanolamine	3	6
Graphite	-	15 mppcf
Hafnium	-	0.5
Heptachlor	-	0.5
Methylamine	25	31
Methyl methacrylate	100	410
Mineral Wool (Fiberglas)	-	2
Naphthalene	10	50
β Propiolactone	-	A5
Silver	-	0.05
Tantalum	-	5
1,1,1,2-Tetrachloro-1,2-difluoroethane	1,000	8,340
1,1,2,2-Tetrachloro-1,2-difluoroethane	500	4,170
Tetramethyl lead	-	0.075
Tin		
(inorganic compounds)	-	2
(organic compounds as Sn) - Skin	-	0.1

*Parts of vapor or gas per million parts of air by volume at 25°C. and 760 mm. Hg pressure.

**Approximate milligrams per cubic meter of air.

(Note: The complete list of 1963 TLV's is enclosed, as a separate publication, with the 1963 Transactions.)

Total Number of Changes:	Recommended Values	Tentative Values
* Revisions	10	4
** Additions	-	16
	10	20

The Threshold Limits Committee has developed a pamphlet entitled "Principles and Procedures for Developing Experimental Animal Data for Threshold Limit Values for Air." This pamphlet outlined suggestions for developing data acceptable to the Committee from which it may form a judgment on a threshold limit. It was developed in response to a growing need by industry and toxicologic consultants.

The Chairman is to represent the Threshold Limits Committee of the ACGIH in the Second International Symposium on Permissible Limits for Air in Industry, in Paris, April 1 to 6.

Suggestions received by the Committee to broaden its scope of activities in the fields of odor and physical agents are being given consideration. An opinion by the Executive Committee on these broadened activities is requested.

I would like to continue with the committee as presently constituted. Harry Ashe, E. J. Baier, Allan Coleman, Hervey Elkins, Bernard Grabois, Wayland Hayes, Keith H. Jacobson, Harold MacFarland, Wm. Reindollar, Russel Scovill, Ralph Smith, Mitchell Zavon, E. Mastromatteo, and with Harold MacFarland as consultant.

I would like to continue to serve as Chairman.

Budget, FY 1963

Travel and expenses for 2 to 4 individuals for 2 or 3 trips per year.	$ 1,000.00
Postage	50.00
Total Budget	$ 1,050.00

Respectfully submitted,

Dr. Herbert E. Stokinger, Chairman
Dr. Keith Jacobson
Dr. Harold N. MacFarland
Dr. William F. Reindollar
Russel G. Scovill
Dr. Ralph G. Smith
Dr. Mitchell R. Zavon

Harry B. Ashe
E. J. Baier
Allan L. Coleman
Dr. Hervey B. Elkins
Bernard Grabois
Dr. Wayland J. Hayes, Jr.

MR. HOSEY: With the following recommendation by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Threshold Limit Values was accepted with appreciation and its adoption recommended with the exception that paragraph two in the preamble to the TLV's be changed by inserting after the word "given" in the first line, the following: "for the year 1963-64." The Executive Committee recommends a maximum expenditure of $750.00 for Committee travel plus $50.00 for postage and suggests that meetings be held in the most economical location.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Dr. Stokinger, do you wish to make any remarks?

DR. STOKINGER: No.

Report of Committee on Trade Names Index

During the month of June, 1962, a letter was mailed to the official industrail hygiene agencies asking for their cooperation again by furnishing the Committee trade name product data subsequent to 1958 (the 1959 Supplement included 1958 information). The following tabulation shows the results of this letter.

Ind. Hyg. Agencies	No. Letters Mailed	Replies Red'd. Indicating Co-operation	New Trade Name Data (Rec'd. to Date)
States	43	14	765
City & Local	15	6	250
Federal (Army, Navy, Air Force,etc.)	14	1	240
	72	21	1,255 (Approx.)

The Committee is attempting to determine which of the products previously listed in the Index are currently on the market and if any new information is available about these products. A second letter was prepared. Up to now about 400 letters have been mailed to respective manufacturers and it is expected that about 2,000 letters will be needed to reach all the manufacturers. The responses from this letter have been most gratifying. The manufacturers have not only cooperated but have included in many instances their latest brochures on their products along with information on chemical compositions. We have had a few returns indicating that the commercial company is no longer in business and other replies have indicated that some of the products previously indexed are no longer marketed.

In the Committee's letter to the manufacturers it is important to note that no mention was made that the material furnished would be kept confidential except that it would be available only to members of the ACGIH. In view of the excellent cooperation received thus far it would indicate official industrial hygiene agencies need not mention "that they will keep the information confidential" as the manufacturers will probably supply the chemical composition of their products when they know the purpose of intended use.

The Committee plans to have the material collected, catalogued and ready to submit to the publisher by the end of 1963 but clerical help available to do this will be the determining factor. The next Index should be published in early 1964 hopefully before the 1964 Annual Industrial Hygiene Conference.

Respectfully submitted,
E. Elbridge Morrill, Jr.
John Vaden

Evan Campbell
Frances Hyslop

MR. HOSEY: With the following comment by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Trade Names Index was accepted with thanks for a job well done and its adoption is recommended.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: Mr. Morrill isn't here, is he? I guess not. He is busy with other things.

Report of Ad Hoc Committee on Legislation

The Ad Hoc Committee on Legislation has studied the charge made to it, and has identified the action needed to accomplish this. Informational survey forms have been devised and are being reviewed by the Committee for needed improvement before sending these out. The stage is now set to proceed with the collection and subsequent use of needed information.

It is suggested that this Committee be changed from an Ad Hoc to a Standing Committee in as much as considerable time may be required to carry out its charge.

Respectfully submitted,

Norman E. Schell, Chairman
E. J. Baier
Dorothy G. Benning
Allen Brodsky
Dr. Hervey B. Elkins
Dr. Samuel Moskowitz
L. A. Penn
Jean J. Schueneman
Thomas E. Sears
Dr. F. J. Tourangeau
Victoria M. Trasko
Dr. Grant S. Winn

MR. HOSEY: With the following recommendation by the Executive Committee, I move the adoption of this report.

(The report of the Ad Hoc Committee on Legislation was received with thanks and its adoption is recommended. The Executive Committee recommends that this be changed to a standing committee with the same members.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: It is so moved. Norm Schell, do you wish to say anything?

MR. SCHELL: No comment.

MR. HOSEY: With the following recommendation by the Executive Committee, I move that the Ad Hoc Committee on Local Chapters be discharged.

(The Ad Hoc Committee on Local Chapters was discharged with commendation by the Executive Committee. The efforts of this Committee will be noted in the Amendment to our Constitution which was passed by a majority vote of the membership.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: I don't know who is Chairman. There was George Hama--George Hama, do you wish to say anything?

MR. HAMA: No comment.

Report of Ad Hoc Committee on Minimal Standards for On-the-Job Medical Services

Such a great deal of general work has been required with reference to this Committee's objectives, the Committee membership has received no guidance or request for activity from the Committee Chairman; nevertheless, some definite progress has been made. To provide basic assistance the Committee Chairman has been working on an identical type of assignment within the State or North Carolina. Assistance has been freely offered by the State Medical Society and the Governor's Council on Occupational Health. In addition, wholesome assistance is also available from our State Department of Labor to explore this subject from the State and Federal (Walsh-Healey) viewpoints. As soon as a basic concept can be developed Committee members will be furnished working materials.

It is recommended that this Committee, as currently constituted, be continued.

Respectfully submitted,

W. L. Wilson, M.D., Chairman

Mary Louise Brown
Dr. Thomas F. Mancuso
Dr. Ralph R. Sullivan
Dr. Irma West
Dr. Edwin G. Williams

MR. HOSEY: With the following comments by the Executive Committee, I move the adoption of this report.

(The report of the Committee on Minimal Standards for on-the-job Medical Services was accepted and its adoption is recommended. The Executive Committee agreed to continue this Ad Hoc Committee for another year with the same membership.)

(The motion, having been duly seconded, was put to a vote and carried.)

CHAIRMAN SCHALL: It is so moved. Dr. Wilson is not here so I guess there are no comments.

MR. HOSEY: We are almost to the end. At the suggestion of its Chairman, Mr. Henry Doyle, the Executive Committee abolished the Ad Hoc Committee on Occupational Health in the Future. I move that this action be taken.

(The motion, having been duly seconded, was put to a vote and carried.)

MR. HOSEY: Is Henry here? (No response.)

Report of Joint A.C.G.I.H.-A.I.H.A. Committee on Qualifications for Industrial Hygiene Personnel

During the past year the members of this new joint committee have carried on committee business by correspondence. A bill of particulars was developed with the consensus that the committee should be concerned with "Development and Recommendation of Qualifications for Standards for Industrial Hygiene Personnel in Industry and Government." The main objective of the joint committee is concerned

with defining the lower and basic level of qualifications for industrial hygiene personnel to assist industry, local, and state government and federal services in establishing a uniform approach in the employment and utilization of industrial hygiene personnel.

An interim meeting of three members of the joint committee was held in Miami at the time of the APHA Conference and the projected work was subdivided into three areas. It was decided that a survey would be made of standards used by industry, local, and state government and the federal services and that the information obtained would be used in developing standards agreeable and utilizable by all. The task has been subdivided so that Dr. Cralley will represent standards used by industry; Miss Trasko will represent standards used by state and local government; and Colonel Dehne will represent those used by federal services. The considerations of this joint committee are concerned with defining the lower or basic levels for employment of industrial hygiene personnel. It is not concerned with standards and qualifications at the certification level as this belongs to the American Board of Industrial Hygiene, etc.

Although this joint committee has made considerable progress, a firm prediction as to time of completion of its business cannot be made at this time. It is recommended that the joint committee as currently constituted be continued for an additional year.

Respectfully submitted,

Col. Edward J. Dehne, Chairman
Dr. Ralph Smith
Dr. Bernard Tebbens
Victoria M. Trasko

Dr. Lewis J. Cralley, Co-Chairman
Jack Baliff
Bernard Bloomfield
N. V. Hendricks

MR. HOSEY: The Joint AIHA-ACGIH Committee on Qualifications for Industrial Hygiene Personnel was accepted with thanks by the Executive Committee and its adoption recommended. I move the adoption of this report.

(The motion, having been duly seconded, was put to a vote and carried.)

Report of Joint AIHA-ACGIH Committee on Respiratory Protective Devices

The final editing session for the Respirator Manual was held in Los Alamos, August 6-10, 1962, with eight Committee members present. The Manual was completed on October 5 and forwarded to the AIHA Publications Committee for review by them and Professor Philip Drinker.

The Committee reviewed the Manual with Mr. Carl Braun on December 8 and released it for publication. The final proofreading was completed on February 20, 1963.

The Chairman received a complete lithoprinted Manual (unbound) on April 19. The printer (Braun-Brumfield) will complete binding and start filling mail orders by May 1. The price for the Respiratory Protective Devices Manual is $5.50 for members of AIHA and ACGIH and $8.50 for non-members. The price was set by the AIHA Board and ACGIH Executive Committee, not the Committee.

The Committee Chairman is resigning effective May 6-10, but wishes to continue as a member. A few members have indicated they wish to resign from the Committee. The Chairman recommends that the Respiratory Protective Devices Committee be continued as a Joint AIHA-ACGIH Technical Committee.

The Chairman believes it will be necessary to order a second printing of the Respirator Manual by September 1, 1963. Before such an order is placed, the new Chairman should be consulted relative to corrections or changes that need to be made. Mr. Carl Braun told the Chairman that corrections or page content changes can easily be made before the next printing.

The Committee has no request for funds at this time.

Respectfully submitted,

Edwin C. Hyatt, Chairman
Harry S. Jordan, Jr.
S. J. Pearce
Dr. H. H. Schrenk
Dr. Leslie Silverman
Dr. William P. Yant

Frank E. Adley
Dr. Clyde M. Berry
Henry N. Doyle
Andrew D. Hosey
Fred R. Ingram

MR. HOSEY: With the following comments by the Executive Committee, I move this report be accepted.

(The report of the Joint AIHA-ACGIH Committee on Respiratory Protective Equipment was accepted with sincere appreciation for their splendid accomplishments and its adoption is recommended. The efforts of a number of years of work by this Committee, namely, the new Manual of Respiratory Protective Devices, is now available from the publisher, Braun-Brumfield, Inc., Box 1203, Ann Arbor, Michigan. A number of changes in the Committee make-up were suggested by its Chairman, Mr. Ed Hyatt. New Committee members were appointed with the concurrence of the AIHA Board of Directors.)

(The motion, having been duly seconded, was put to a vote and carried.)

MR. HOSEY: And now last but not least, the reports which were submitted by our representatives on the ASA and the ASTM Committees were reviewed by the Executive Committee and these reports were accepted. None of these required any action by the Conference.

CHAIRMAN SCHALL: Do you move that they all be accepted?

MR. HOSEY: Yes, I so move.

(The motion, having been duly seconded, was put to a vote and carried.)

MR. HOSEY: This concludes the report of the Executive Committee.

Paul Woolrich just asked me to announce that there are 25 persons who reserved Banquet tickets. The Committee would appreciate these being picked up before you go down to 1014 Broadway this afternoon, and we still have a few tickets left for the Banquet.

CHAIRMAN SCHALL: Is there any old business to be discussed at this time?

Any new business?

MR. VILLARES: Mr. Chairman, my name is Enrique J. Villares from Puerto Rico. About two years ago we requested permission to translate the TLV's, but by the time we got the permission the thing was translated and it was published, the TLV's of 1962 are already in effect. We are willing to keep up translating these values on a yearly basis, but we would like to work out an agreement or something by which permission would be granted earlier so that they can be out in time.

CHAIRMAN SCHALL: Fine. Can that permission be granted by the Executive Committee by mail?

MR. HOSEY: I assume it can. The Executive Committee agreed that each request to reprint our publications would be handled separately and I was given authority by the Executive Committee upon written request to give permission to reproduce the TLV's. One of the reasons for the delay in your case, Mr. Villares, is the TLV's are adopted usually at these meetings and it is July or August before they are ever published. We have adopted a policy never to let anybody reprint the Values as they came from Stokinger's actual report. It is only the printed Values, so you are actually reprinting our publication. I don't understand the reason for the delay though, I thought we handled that pretty speedily.

MR. VILLARES: There was not only delay in the permission but also by the time we got into the printing, the government printing took so much time. If we had the TLV's already translated it would not take so much time. We would like to work out an agreement by which permission is granted earlier.

MR. HOSEY: Write a letter to me.

CHAIRMAN SCHALL: I feel sure this will be granted on a permanent basis.

Is there any new business to be brought up at this time?

MR. BARRETT: In this same connection, the report of the Threshold Limit Values Committee hasn't been read yet. As Mr. Villares pointed out, it will be some time before it is published. How are we going to learn of the new values if they are not read at this meeting?

CHAIRMAN SCHALL: Do you want to take time to read it?

MR. HOSEY: This has never been done, to the best of my knowledge, Jim, not to read the whole report.

CHAIRMAN SCHALL: Can you read just the changes?

MR. HOSEY: I would suggest Dr. Stokinger do that.

CHAIRMAN SCHALL: All right, Dr. Stokinger will read just the changes. Is that all right?

DR. STOKINGER: Under the heading of Revised and Added Recommended Values for 1963 -- these are values that are already in the list but we saw fit through the introduction of new evidence and information, to change or revise them either upward or downward.

(The list of revisions and additions appears on page 78.

There are other factors that we have added to the list this year. We have made the innovation of applying the letter "C" to those substances that are acutely acting and which we believe should not permit an excursion above the listed value. This is an attempt to bring into line the definition that is used by the ASA Z-37 Committee and to reconcile it with the facts of life, you might say. We hope that the Z-37 Committee will in turn revise their definition for those substances which are slowly acting and to include in their definition an idea of time-weighted averages for those substances for which it is appropriate.

We have added a section in the appendix on ways and means of arriving at the Threshold Limit Values for mixtures of several types. I think with the examples given in the appendix, it will be clear to those that have to use these Limits or would like to make a Limit for a mixture. They could, I think, proceed in a pretty orderly way with these examples.

MR. HOSEY: I might explain, that was the reason for that one change, to make sure that this is a tentative sort of a thing and to let the membership have an opportunity to review this data before it is finally adopted as a preamble to the Threshold Limit Values. That is the only reason for that change.

FROM THE FLOOR: Could I ask Dr. Stokinger to give us the tentative Values on two materials, fiberglas and freon? These are of particular interest to us.

DR. STOKINGER: I have it with me. I don't have it in my head.

CHAIRMAN SCHALL: Could you do that later and we will go on with the meeting. It is getting late. Did anyone else have any comments?

MR. MARR: I think we have had in the past about 5 million particles per cubic foot limit for asbestos materials, and I want to ask if that has been discussed this year by the Committee.

CHAIRMAN SCHALL: Dr. Stokinger, would you like to answer that?

DR. STOKINGER: No, we haven't given any further considerations to asbestos than was already published in the other formal list.

CHAIRMAN SCHALL: Does that answer your question?

MR. MARR: Yes, that is the question I asked. You know there is some question as to fiber length we should measure. I think those of us who have worked with this material believe it is in error, and I'd like to see if we can get some discussion on what we should do about this.

CHAIRMAN SCHALL: I would suggest that you write your comments to the Threshold Limit Value Committee. Yes, Doctor?

DR. STOKINGER: I might say that the Division of Occupational Health is now conducting an environmental survey on this problem of asbestos, and resulting consequences, and when this is completed we will be in a better position to make a decision along the lines you want.

CHAIRMAN SCHALL: This is a world-wide study that they are doing.

Are there any other comments? If not, I would like to remind the Resolutions Committee that they are to meet again with the Executive Committee at 7:30 tomorrow morning. And again, the buses leave the main door of the Hotel at 1:30 and periodically thereafter. I guess as soon as they fill up, they will take off for 1014 Broadway.

The roundtable discussion start at 8:30 tomorrow morning, and could I have a motion to adjourn this meeting?

FROM THE FLOOR: So move.

(The motion, having been duly seconded, was put to a vote and carried.)

. . . . Whereupon, at 12:15 p.m., the meeting was adjourned . . . . .

BUSINESS SESSION - May 7, 1963

E. Lynn Schall, Chairman, Presiding

The Second Business Meeting of the 25th Annual Meeting of the American Conference of Governmental Industrial Hygienists convened in the Roof Garden of the Sheraton Gibson Hotel, Cincinnati, Ohio, on Tuesday, May 7, 1963, at 10:45 A.M. with Chairman E. Lynn Schall presiding.

CHAIRMAN SCHALL: Is Ralph Smith here?

Bob Keenan, would you want to give the report for the Chemical Section, the Round Table?

These are five-minute reports and we have our lights operating again, and we don't have any P.A. system, so I'm going to hold Mary Louise until last, hoping it will be hooked up by then.

MISS MARY LOUISE BROWN: Oh, I can shout with the rest of them.

CHAIRMAN SCHALL: Good for you.

Mr. Keenan will give the report for the section on chemicals.

MR. KEENAN: We had a very stimulating section this morning with a lot of contributions from the chemists who attended our Round Table. We started off with a discussion of Russian TLV's versus ACGIH TLV's, a sort of preview of Dr. Stokinger's talk scheduled for two o'clock this afternoon. I will not try to eclipse his remarks at this time. He pointed out that some of the Russian values are out of line with ours, definitely, as we are well aware. They are much, much lower and, in most cases, these substances are quite slow acting. Even the reaction products in these cases are slow acting substances. He feels that the values that have been advocated by the Russians are unrealistic and he will go into a more thorough discussion this afternoon.

He did mention two very good and interesting analytical papers that were presented at this International Congress on TLV's that he attended in Paris last month. One of the authors, a gentleman by the name of Dr. J. C. Gage, associated with Imperial Industries, Ltd., in England, suggested that in cases where low levels of TLV's are desired, it may be in some cases preferable rather than to use a zero value to tell the analytical chemist how low the toxicologist really wants a TLV to be and then let the chemist work out a suitable acceptable method for that measurement.

As Dr. Stokinger mentioned, Dr. Gage was assuming a C.T. relationship which may be an incorrect assumption in cases of cancer development where you are dealing with carcinogens. If it takes, let's say, a thousandth of a microgram to produce cancer, half that amount may also produce a cancer. Either you are going to produce cancer or you are not. You can't cut it that fine, where you are dealing with that type of substance.

Synergistic effects came up for discussion also. It was mentioned that competition for enzyme supply occurs in synergism and at lower and lower levels more zyme sites become more available so that the risk is lessened in synergistic materials.

Further discussion was conducted on the decomposition products resulting from Teflon. We pointed out this morning that one thing we neglected to mention yesterday was that we were able to detect hydrogen fluoride under only one experimental condition in this Teflon decomposition study that we have been conducting in our laboratory. HF was produced at the relatively low relative humidity of 3.8 percent in an atmosphere of air. At higher humidities there was no HF. The principal compounds of what we believe to be of toxicologic interest are carbon oxyflouride compounds which are produced maximally around 500° C. At higher temperatures the oxycompounds are not produced at 560° C. and above, but rather CF_3 and CF_2 fragments are produced.

There has been a great deal of interest, increased interest I should say, in the analyses of polycyclic hydrocarbons in recent months. We have received some requests in our laboratory to perform this determination. We discussed Lloyd Monkman's procedure this morning. Lloyd led the discussion explaining how he has produced a streamlined procedure for this analysis, and he quoted the agreement that he obtained for 3-4 benz-pyrene estimations with the older methods that had been used for several years. His method consists essentially of cyclohexane extractions of materials in the cold, and after filtration estimating the 3-4 benzpyrene by flourescent measurement.

A question was raised as to whether there had been any experience with difficulty associated with polyurethane resins breaking down at elevated temperatures. Nobody in our group had had such an experience. Possibly some present now may be more aware of a problem with these materials.

Irving Davis pointed out that in his experience using gas-fired make-up air heaters, after one or two years of operation the carbonization that occurs on the burners seems to be possibly accounting for an increased production of CO. He has measured concentrations of 10 to 20 parts per million in such systems in industry.

My time is up and I think that pretty well covers the highlights of our discussion. Thank you.

CHAIRMAN SCHALL: Thank you very much, Bob.

We are ready for the Engineering Section. George Hama, are you going to talk on that?

MR. HAMA: I thought we had quite a profitable and stimulating session. The first subject that was discussed was the experiences with the 1962 silica dust threshold limit values. Some of the men pointed out that it is a little difficult to give to people the right limit when you are having several different silica dust concentrations in your air-borne samples. And somebody suggested, I believe it was Bob Harris, a formula for weighting these TLV values from the formula as to time. We had quite a discussion of the pros and cons of the formula versus the increment or step method of expressing it. I think there is no trouble with the values themselves, I think the difficulty lay in the fact that it was a little

difficult to express to some people the values from a formula. We took a vote to see what the preference was in the group, and we had 17 for the formula and 9 for the step increment method. I think there were about 60 people there and so it shows that quite a few have not decided what they liked. I think there is a trend to use the formula. On some previous informal group discussions, there seems to be a feeling the step has some advantage.

The second thing discussed was the potential hazards from plant compressed air for air-supplied respirators. It was pointed out here that carbon monoxide can be produced in these air-supplied respirators if the type of compressor used is not satisfactory. There should be temperature controls, and it was also pointed out that equipment of a Hopcolite nature is available for removing carbon monoxide from the compressed air.

The matter of SCUBA diving air was also injected in this discussion. It appears that some compressed air group has set a suggested limit of 50 parts per million as the highest that is allowable in the SCUBA diving air. It was also pointed out this is very high but there is a need to check the air used for SCUBA diving.

There was discussion on ozone from ozonizers and this took up two sides; one the industrial and commercial use, and then the domestic type as used in the Puritron type of equipment. The industrial and commercial type can produce high concentrations of ozone. The others may give a certain amount of ozone from their ultraviolet tubes.

There was a discussion on direct fired heaters. Here it was pointed out that the air should come from the outdoors and should not be recirculated air. The Michigan Health Department has had some bad experiences with these direct fired heaters. There is a very cheap one on the market selling for about $600.00 which is promoted by some very active salesmen, so there needs to be a guard against this type of equipment which is not satisfactory. There was also a discussion on direct fired make-up heaters and it appears that presently we have had no difficulty with them.

There was a discussion on lazers and mazers. I believe Ed Barrett pointed out that these are coming into use quite a bit and one can be built for as low as about $55.00. It is more of a safety problem and there is a need for goggles and possibly a well-lit room to contract the pupils. It is used in machining operations, welding glass, and a lot of other things.

There was a question of hearing loss from noise at twenty thousand cycles per second. Although there is no definite criteria on this, some of the members of the group thought there was some question as to damage to hearing from exposure to this ultrasonic noise even though you don't hear it.

There was a discussion on the matter of sampling and counting asbestos dust, and some of the men thought the midget impinger was very unsatisfactory. Others thought it could be used. The subject was not resolved as to just exactly what was the best way to count and sample for asbestos dust. It appears that the Public Health Service is going to do some work on this subject, which seems to be much needed.

CHAIRMAN SCHALL: Thank you very much. George just made the bell, too. Very nice.

Dr. Williams, are you going to speak on the Interdisciplinary Section?

DR. WILLIAMS: I have just been given permission not to necessarily utilize the entire time period.

We had a very heated, if not animated discussion, centering around and coming back to, from time to time, the question of interdisciplinary approach to public health problems. The keynoter of the meeting was Dr. Marcus M. Key, who talked about methods of determining or measuring damage to the skin or exposure to the skin, with the view to perhaps better stating the TLV figures in considering exposures to substances that entered the body through the skin, whether it be the unbroken skin or not, but the general assumption through the unbroken skin. In other words, per cutaneous dose.

It was felt that this indeed was a subject worthy of considerably more thought and study than had been given to it in the past, and it is surely one of the most complex questions confronting public health scientists, including dermatologists.

From an interdisciplinary standpoint, one needs also the physician because we are talking about systemic disease, we are simply limiting -- did limit our discussion this morning in this area, to per cutaneous application.

You have a sick man, you get a doctor, no question about that. You need a chemist for several reasons. What is the stuff that made the man sick? Biochemist, what is the biological mechanism that allowed the stuff to go through the skin? Physiologist, what is the skin function and how do we look at skin function in order to better understand transfer of substances through the skin?

To be sure, we need an engineer, he is going to, in the first place, design our exposure chambers. What would you do without an engineer? Then when we get at the answer we are looking for, many, many, many of the protective measures that we will certainly think about, and some of which we will try, will need the skills of the engineer to implement these controlled measures.

We will need chemists, again.

Now all of these people are always working on all of these problems anyhow. It, however, was the thought of the group, certainly the Chairman of the group, that much time would be saved, much frustration would be avoided if these people were to get together early in the planning, and almost in the pre-planning phases of these endeavors, be it investigative or be it operational in character.

We did have a reference to, or report, on, an outbreak of isopropyl alcohol poisoning in a ladies restroom in an institution of some sort. This isopropyl alcohol was in a freon bomb. It has happened before, but the thing that we're interested in was what kind of action should an interdisciplinary group take, to prevent such accidents in the future? Nothing definite was suggested.

CHAIRMAN SCHALL: Thank you, Dr. Williams. Is Dr. Key here? You really spoke for him, didn't you?

DR. WILLIAMS: Yes.