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A NATIONAL GOAL FOR OCCUPATIONAL HEALTH

Special Report to

THE SURGEON GENERAL OF THE
UNITED STATES PUBLIC HEALTH SERVICE

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

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Dr. William H. Stewart
Surgeon General
United States Public Health Service
Washington, D.C.

November 19, 1965

Dear Dr. Stewart:

In establishing the National Advisory Environmental Health Committee, the Surgeon General requested the Committee to review from time to time the various environmental health programs in the United States Public Health Service and advise him on needs thus disclosed.

In line with this charge, the Committee gave consideration to the program in occupational health on June 9, 1964 and again on November 9, 1964.

As a result of these reviews, the Committee concluded that the occupational health program, which was at an earlier period a major and vital contributor to the occupational health efforts in the nation, was in serious need of overhaul. Although this was perhaps partly the result of the eclipsing effect of the heavy emphasis placed on the development of newer areas of environmental health, it was at least equally the consequence of a failure of the program to readjust in response to major changes in industry, in labor and in public health patterns.

Accordingly, the Committee recommended a complete and detailed study of the appropriate role of the Division of Occupational Health in the national program of the Public Health Service; the objectives of this study were to develop "a revised charter to be aimed at spelling out first, the responsibilities and mission of the Division appropriate to the current and anticipated state of technology and health resources in the nation, and from this to define the resources required."^{*}

In line with these recommendations Dr. Robert Anderson, then in the Chair, appointed the members of the Committee listed below as a Working Group to assist the Staff of the Division of Occupational Health in defining the mission and in establishing an estimate of the resources required for its accomplishment.

*Position Paper, Jan. 18, 1965, Working Group on Occupational Health

The attached document is the result of this request. This statement is primarily the product of the staff of the Division of Occupational Health with the assistance of several very capable consultants. However, before and during its preparation the Working Group remained in close touch, both as a group and individually, with the progress of the study, the formulation of the conclusions and recommendations, and the writing of the report. During this period many suggestions were made by the Working Group which were incorporated in the report.

Because of the close relationship, this statement accurately reflects the position of the Working Group. We endorsed it strongly.

On November 18, 1965 it was presented to our parent group the National Environmental Health Committee. With the inclusion of a number of helpful suggestions for strengthening the report it was endorsed by them, and recommended for transmittal to you.

We believe that this statement contains the elements of a program which the country needs and which is sound, realistic and feasible. We believe that the budget proposals are appropriate and deserving of support.

We hope this charter can mark a turning point and guide the way to fulfilling an important national responsibility.

Respectfully submitted,

Dr. Norton Nelson (Chairman)
Director, Institute of Environmental Medicine
New York University Medical Center

Mr. George Flaccus, Jr.
Vice President of Industrial Relations
Jones & Laughlin Steel Corporation

Mr. George R. Taylor
American Federation of Labor and
Congress of Industrial Organizations

Dr. James Sterner, Medical Director
Eastman Kodak Company

On August 1, 1970, the Occupational Safety and Health Act was signed into law. This report is a special report to the Surgeon General of the United States Public Health Service, prepared by the Advisory Committee on Occupational Health and Safety.

PROTECTING THE HEALTH OF EIGHTY MILLION AMERICANS

A NATIONAL GOAL FOR OCCUPATIONAL HEALTH

**Special Report to the Surgeon General of the
United States Public Health Service**

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PREFACE

On August 18, 1965, President Lyndon B. Johnson highlighted the importance of occupational health by pointing out that a reduction of one day in the annual rate of sick absence among American workers would add \$10 billion to the Gross National Product. Earlier, on June 21, 1965, the President announced new guidelines for Federal Employee Health Services, designed to make the Federal Government a model employer in this regard.

For some years, there has been evidence of growing concern among knowledgeable persons and groups about the neglect of the health of American workers. During the past two years particularly, actions by various official and nonofficial bodies have pointed to occupational health as a major unmet national need.

The Conference of State Sanitary Engineers issued a position statement calling for expansion of the occupational health program within the Public Health Service and recommending specific actions for strengthening State programs. (Appendix A.)

The Association of State and Territorial Health Officers adopted recommendations for the strengthening of occupational health at all levels of government and offered its assistance to the Surgeon General, Public Health Service, in attaining the recommended objectives. (Appendix B.)

The Group Health Association of America, Inc., submitted to the Surgeon General a statement pointing out the lack of adequate support for occupational health, from government, management, and labor, and listing needs of "overriding importance in the near future." (Appendix C.)

The Surgeon General's Advisory Committee on Occupational Health prepared formal resolutions for an action program, which were submitted to the Surgeon General. (Appendix D.)

The National Advisory Environmental Health Committee appointed a working group to study the role of the Public Health Service's occupational health program. Its report pointed out that a "restatement of objectives and resources is timely," offered assistance to the Division of Occupational Health in its efforts to develop a new charter, and presented interim recommendations and issues for consideration in the Division's study. (Appendix E.) The report was approved by the parent Committee and presented to the National Advisory Health Council.

The National Advisory Health Council recommended to the Surgeon General that he take such action as was possible to implement the recommendations of the National Advisory Environmental Health Committee.

The House Subcommittee on Appropriations ordered the report of the working group of the National Advisory Environmental Health Committee made a part of its 1965 Report of Hearings and gave notice "that the 1967 request for [the occupational health] appropriation will be measured against the recommendations the special task force on occupational health has made to the National Advisory Health Council."

A Committee comprising representatives of the Surgeon General and of the Association of State and Territorial Health Officers, appointed to study the States grant program of the Public Health Service, included in its report a recommendation that the categorical grants program should include grants for occupational health.

The Occupational Health Section of the American Public Health Association submitted a resolution urging "the Public Health Service, in cooperation with labor and management, to take leadership in developing a program of occupational health with national goals and missions that will meet today's needs." The resolution was adopted by the APHA Governing Council at the Association's 1965 annual meeting. (Appendix F.)

There could be no question, therefore, that there existed a serious and urgent need for comprehensive study of the occupational health needs of the Nation, and of the best methods for meeting those needs. The Division of Occupational Health, Bureau of State Services, undertook such a study with the assistance of Dr. William W. Frye, Chancellor of the Medical Center, Louisiana State University, and Dr. William F. Ashe, Professor of Occupational Health (Retired), Ohio State University, who served as consultants. The study group here presents its findings and recommendations.

Dr. Ashe's expert knowledge in the field of occupational health admirably qualified him to advise and counsel the Division of Occupational Health on the problems under consideration. Dr. Frye's broad experience in medical education and in preventive medicine at the local, State, national, and international level, endowed him with the objectivity essential to a careful and unbiased appraisal of those problems. The valuable contributions of these two consultants are most gratefully acknowledged.

Chief
Division of Occupational Health

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INTRODUCTION

This report presents the findings of a comprehensive study initiated by the Division of Occupational Health in an effort to clarify the many problems, contradictions, and deficiencies which are known to exist in the field of occupational health today; to explore its own role in meeting national needs; and to determine the most feasible means for meeting such needs.

As background for the study, documents dealing with specific subject matter were prepared by senior professional people within the Division and by outstanding authorities outside the Division. Discussions were held with the American Medical Association's Council on Occupational Health, the New York Academy of Medicine, the New York Chapter of the Industrial Medical Association, and a number of State health officers. Dr. Frye has visited the installations of the Division of Occupational Health and talked with numerous industrial physicians, industrial hygienists, and others interested in the field. The report represents the best thinking of the senior staff of the Division of Occupational Health, tempered and modified by views obtained in the above processes and by the objective analysis of Dr. Frye.

Our task has sometimes been referred to as the development of "a new charter for the Division of Occupational Health." Certainly the role and responsibilities of the Division, as the Federal agency most concerned with worker health, need to be clearly defined, and this we have attempted to do. However, so complex and so far-reaching are the implications of occupational health that the Federal role can only be formulated in relation to the roles of many other forces in our society which have also a direct interest and responsibility in maintaining the health of workers--other Federal agencies, the various State and local jurisdictions, labor, industry, insurance companies, the medical and industrial hygiene professions, and the multitude of organizations working in the field.

We have, therefore, attempted to define a National goal, and National program, in which each of these diverse elements can play its proper part, in which a true partnership of all forces can be formed, under the leadership of the Division of Occupational Health, for forceful assault on the occupational health problems of American workers.

Murray C. Brown, M.D., Chief
Division of Occupational Health

William W. Frye, Consultant

INTRODUCTION

This report presents the findings of a comprehensive study conducted by the Division of Occupational Health and Safety, New York State Department of Health, in cooperation with the National Institute for Occupational Safety and Health (NIOSH). The study was designed to identify and evaluate the occupational health and safety hazards associated with the use of heavy machinery in the construction industry. The study was conducted in three phases: a literature review, a field study, and a laboratory study. The field study was conducted in the New York State Thruway Authority's construction sites, and the laboratory study was conducted at the State University of New York at Binghamton.

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Author: Dr. W. M. ...
Division of Occupational Health and Safety

William W. ...

SUMMARY

Discussion

The Objectives.--The national program in occupational health should have two goals. One is the elimination of any factor which makes the worker pay with his health or his life for the privilege of having a job. The second is the promotion of the nation's economy through the reduction of sick absence and lowered production because of correctable health factors associated with the workplace. The average American worker misses five days a year because of illness or accidents. On the basis of our present knowledge and experience, a potentially attainable five-year goal in occupational health is a reduction of one day in the yearly average of sick absence, and a comparable reduction of related losses, such as those from temporarily restricted activity while the worker is on the job but below his usual level of health. At present rates, these improvements would result in a \$10 billion annual gain in the gross national product.

The Problem.--America's workers represent 40 percent of the nation's population and pay 60 percent of the taxes. Yet, 80 percent of these citizens work in places where no type of health service is provided, and the protection given the remaining 20 percent varies from excellent to minimal. On the basis of 1964 data, sick absence and other factors related to the workers' ability to perform accounted for a production loss equal to about 7 1/2 percent of the gross national product. A comprehensive nationwide program directed at promoting the positive health of the worker could reduce this loss by one-fifth. The benefits would include an increase of \$10 billion in the gross national product and a reduction in personal suffering. Such a gain is demonstrably possible. (Appendix G)

Another indication of the occupational health problem is the steadily increasing volume of workmen's compensation expenditures for medical care and for cash payments to workers and their dependents. In 1963, this amounted to \$1.6 billion, an increase of 80 percent in 9 years.

Industry is currently spending \$320 million each year to provide in-plant health services to some 15 million workers. With proper stimulation and assistance, industry can be encouraged to expand and improve these existing services and to start new ones. Labor, both in bargaining and in its own provision of services, is placing increasing emphasis on a healthful workplace. The critical element that has been lacking in occupational health is a primary focus of leadership binding together the responsibilities which have been diffused through the diverse groups with common obligations or interests in the field. The opportunity exists today for a partnership between labor, industry, and government to mount a tri-partite program, stimulated by Federal leadership, directed toward elimination of all health hazards in the workplace and the promotion of positive health among a major group whose health needs have been inadequately served.

The Way.--The Division of Occupational Health, the major national resource for launching an effective occupational health program in the United States, would be given legislative responsibility and necessary resources for managing the Federal portion of

such a program and for stimulating services by the various State and local governments, labor, and industry.

The Needs.--The Division of Occupational Health has the leadership and skills upon which an effective, imaginative national program can be built. Its accomplishments in selected fields have been outstanding and are recognized throughout the world. The Division needs only the legislative authority and funds to extend its existing activities and to assume effective responsibility for areas of need identified for many years. The Division is confident that occupational health services can be extended to all American workers, eliminating health hazards they have unnecessarily faced for too long, and protecting the nation's most valuable resource.

Because some occupational health services exist in various levels of government and in labor and industry, Federal funds would be used as seed money and the cost of mounting a nationwide program would be relatively small. In the case of Federal workers, for example, many of whom already have access to some type of employee-health services, the cost of developing an organization and a program to introduce occupational health practices into existing units and to expand services to cover all 2 1/4 million workers would be \$500,000. Even where there would be Federal responsibility for direct provision of services, programs should be developed to delegate this responsibility to the States wherever practicable. This approach, plus the leverage to be gained from the wise use of Federal funds, would keep the cost of an effective national occupational health program low in comparison with the benefits to be derived.

In addition to the \$1 million for services to Federal employees and migrant workers, other yearly Federal costs of such a program would be: \$15 million for grants to States to develop their own programs and for contracts to carry out delegated Federal responsibilities; \$5 million for technical services which would provide those services which cannot be delegated; \$12.5 million for research and development of standards, \$2.5 million for measuring and surveillance of the problem; \$10 million for research grants; \$2 million for personnel development.

The annual cost of the proposed program represents approximately 60 cents per worker, a modest investment in terms of health protection and one which can bring substantial economic benefits to the whole Nation.

A National Goal and Program

[The proposed national program in occupational health should have as its goal:]

1. Elimination or control of any factor in the work environment which is deleterious to the health of workers.
2. Promotion of good health and well-being as well as prevention of illness among workers.

[Achievement of this goal will contribute directly to the well-being of 80 million workers, will reduce work absence, increase productivity, and strengthen the economy.]

[The economic significance of occupational health is evidenced by the fact that a reduction of one day in the average annual sick absence of American workers could result in a possible addition of \$10 billion to the Gross National Product.]

The action to achieve such a gain requires the joint efforts of labor, management, and government at all levels, with responsibility and resources for leadership assigned to the Division of Occupational Health. The following recommendations are directed toward implementing the Federal responsibilities in the national program.

Program Recommendations

1. The Public Health Service must be given specific legislative responsibility and necessary resources to allow the Division of Occupational Health to launch an effective national occupational health program, drawing together and expanding Federal responsibilities in the field, and stimulating required actions by State and local governments, labor, and industry. It should direct its effort toward (1) the extension of health protection and preventive services to all American workers and (2) the development of much needed scientific knowledge relating to occupational health hazards and diseases. Specific program actions--some of them requiring that new responsibilities be vested in the Division of Occupational Health--are outlined in the following items.

2. The Division should be given the authority and resources to revitalize State occupational health programs by granting, on a matching basis, Federal monies to the States for this specific purpose. The Division should develop standards for State programs and model legislation and make sure that all Federally-supported programs are organized and conducted in accordance with such standards. Division advisers should be assigned to States to assist in program development.

3. The Division should be empowered to develop Federal criteria upon which standards for protecting the health of the worker could be based. Evolved in consultation with the entire scientific and technical community, these criteria would serve as technical guides documenting the relationship of specific exposures to health hazards. They would be available to States to use in carrying out their occupational health responsibilities. Included would be criteria for industrial exposure to chemical and physical hazards as well as standard methods for measuring and analyzing environmental stresses. The Division's authority should extend also to establishing labeling standards for industrial chemicals transported between States and require compliance with such standards wherever Federal jurisdiction exists. This is an area of industrial and public health protection which is at present outside the jurisdiction of any Federal agency.

4. The Division should be responsible for assuring the provision of adequate occupational health services to Federal employees and for enforcing Federal standards within Federal establishments. This responsibility for occupational health services should extend also to beneficiaries of Public Health Service medical services, such as merchant seamen, the Coast Guard, American Indians, migrant workers, and Federal prisoners. It would be discharged primarily through the evaluation and certification of programs, technical consultation, and training, with the various departments and agencies assuming primary responsibility for the conduct of the programs. Direct assignment of Division personnel would be kept at a minimum. Legislative or administrative action giving the Division of Occupational Health authority to act in these Federal areas is specifically recommended.

5. The Division, by negotiation or legislation, should be given a clearly defined role in the promulgation of the health and accident prevention provisions of the Walsh-Healey Act, which impose certain requirements upon Federal contractors. The Division must be in a position to provide professional skills to develop Federal standards, insuring healthful work conditions for that very large part of the work force employed by Federal contractors.

Similar negotiations or legislative changes should be undertaken in connection with the statutory responsibilities of other Federal agencies, such as the Bureau of Mines, relating to health and accident prevention so that their relative roles with the Division of Occupational Health can be clarified and the effectiveness of the programs increased.

6. The Division should develop standards to assure that research being done for the Public Health Service under grants or contracts is conducted under safe and healthful conditions. It is recommended that serious consideration be given to adding a clause to all Department of Health, Education, and Welfare contracts and grants which would require certification that such standards are or will be met. Consideration should also be given to extending this certification to all Federal grants and contracts which do not fall under the Walsh-Healey Act. If and when such provisions are adopted, they should include authority to delegate, under contract inspection, activities to State programs with demonstrated competence.

7. The Division should have specific authority to enforce Federal health standards in industries engaged in interstate transportation. The Federal government has the only jurisdiction covering this segment of industry but, except in a few cases such as airline flight crews, has failed to exercise its responsibility for occupational health. No polity accepts or assumes full responsibility for on-the-job health of railroaders, truckers, or airport workers, for example.

8. The Division should be given authority and funds for demonstration grants to stimulate the development of new and effective methods for protecting the health of workers not accessible through direct Federal authority. The lack of adequate occupational health protection for workers in small industry and agriculture (which together employ approximately 80 percent of American workers) constitutes a national problem of such gravity that dynamic and imaginative Federal action in this area is urgently needed. Support should be given to short-term demonstration projects by non-profit agencies, medical groups, industry, labor, farmers' organizations, or community groups. A strong Federal program of consultative and technical services is essential.

9. The Division should substantially expand its in-house and extra-mural research activities to permit the development, and continuous review, of criteria for industrial exposure; to expand clinical and epidemiological studies; to develop new instrumentation and methods for controlling health hazards; to improve understanding of the biochemical and physical mechanisms involved in occupational illness; and to provide direct technical services to other agencies. These activities should utilize the full range of skills available in the scientific community.

The Division's field studies of occupational disease on an industry-wide basis should be expanded. To facilitate these studies, the Surgeon General should have the necessary authority to examine work records, the work place, and the workers in these inter-State industries.

The Division should expand its Research and Training Facility in Cincinnati and its Appalachian Laboratories for Occupational Respiratory Disease. It should establish regional laboratories to provide rapid technical assistance to States.

To achieve these objectives, it is specifically recommended that resources for research grants, as well as for direct research operations, be increased.

10. The Division should support and aid in the development of occupational health clinics in hospitals, universities, and community establishments. The clinics will provide clinical-medical services and furnish an opportunity to use accidental human exposures in evaluation of toxic hazards and validation of indicator systems for subacute toxic exposure. They will perform other related research and devote special attention to problems peculiar to the geographic area served. In addition, the clinics will provide sites for advanced and specialized training of occupational health personnel.

11. The Division should devise and put into practice immediately the most effective methods possible for measuring and anticipating the nature and extent of the national occupational health problem. Its methods should include a substantial expansion of epidemiological studies, sample monitoring of work environments, analysis of technological trends, statistical studies, and development of occupational disease reporting mechanisms through Workmen's Compensation Commission, the National Health Survey, and the Medical Care for the Aged program. The Division should also provide leadership to employers in the development of uniform recording and reporting procedures for disease prevalence and mortality in employed groups.

12. The Division should undertake a broad program to develop the manpower skills required for a nationwide effort in occupational health. It should be authorized to make training grants to universities and other institutions and should give special attention to a carefully coordinated program of on-the-job and formal advanced training. It should expand its short-term training program, and, as a means of conserving and fully utilizing scarce scientific skills in the many disciplines required, it should develop an effectively trained corps of supporting personnel.

13. The Division should strengthen and expand its Technical Information Service to create an effective national resource for the accumulation and dissemination of occupational health knowledge.

14. The Division should expand its informational and educational activities to provide rapid and effective communication of guidance to industry and labor, and to advance the health education of workers. To focus national attention on the need for worker health protection, a National Conference on the Health of the Worker should be arranged at an early date.

15. The Division should establish a Scientific Advisory Committee to provide continuous in-depth review of program activities and to recommend changes in content and emphasis as required.

16. The program outlined in this report will require a minimum annual budget of \$50 million, which will be distributed roughly as shown on pages 38-39. The fulfillment of this program should proceed with the utmost expedition and as rapidly as manpower and orderly development of program elements permit. The budget for Fiscal Year 1967 should be increased to \$15 million to meet the National Advisory Environmental Health Committee interim recommendations, which were approved by the National Advisory Health Council in March 1965, and to permit the Division to prepare for the full-scale national program.

Included in the preparation would be development of legislation, organizational plans, and cost-benefit analysis for the Federal program; development of model State laws and standards for State occupational health programs; development of standards for Federal employee health services; and recruitment of the initial cadre of personnel at the Federal and State levels.

17. It is recommended that an Inter-Departmental Committee on Occupational Health, and a similar Intra-Departmental Committee within the Department of Health, Education, and Welfare, be established to consider, at their respective levels, appropriate roles of the various governmental agencies in occupational health. They should also recommend legislation and devise administrative actions effectively to coordinate and expand Federal efforts in this field.

A REVIEW OF THE PROBLEM

Occupational Health and the National Purpose

America is a nation of workers. Eighty-million people, or 40 percent of the Nation's population, work for a living. This 40 percent pays 60 percent of all taxes. It must be remembered, moreover, that every one of the remaining 114 million people in the United States is dependent, directly or indirectly, upon the productivity of those who work. The health of the worker affects everyone and is the concern of all.

In America today, it is not acceptable that any worker should pay with his health or his life for the privilege of having a job. Our national purpose includes the extension of good health to all our people, and protection of the health of workers is fundamental to that purpose. In plotting the way to a better life for all Americans, the President has pointed out that "...the health of our people is the foundation for fulfillment of all our aspirations." Yet, even in our enlightened society, millions of American workers, as a direct result of their occupations, are exposed to health damage--from toxic chemicals, from physiological stress and, increasingly, from psychological stress.

Furthermore, the productivity of any nation depends, in large part, upon a healthy and vigorous work force. The gainfully employed citizen is its most valuable economic resource. Yet the average American misses over five days of work each year because of illness which means that, every day, approximately 1.6 million workers are absent from the job because of sickness. Direct loss of production from sick absence, in terms of wages alone, amounts to \$15 billion per year; in terms of the Gross National Product, the cost of sick absence is more than three times that amount--approximately \$50 billion. A large part of this sickness is preventable. A reduction of just one day in the average annual rate of sick absence would add \$10 billion to the Gross National Product. As long ago as 1956, Jerome Pollack of the United Auto Workers, C.I.O., pointed out that the annual loss to the economy from sick absence could be estimated as one-eighth to one-fifth of the entire national income.

Factors Affecting Worker Health

New Problems.--In this second half of the 20th century, the United States is engaged in a technological revolution which has tremendous implications for the health of all the people, and particularly for the health of workers. It has been estimated that every 20 minutes a new, and potentially toxic, chemical is introduced into industry. New processes and new sources of energy present occupational health problems of unprecedented complexity. Automation makes possible the removal of some workers from hazardous environments and offers new scientific tools for the prevention of disease; on the other hand, it can introduce unexpected or bizarre physical hazards and presents new and subtle threats to mental health.

Old problems.--Occupational diseases which first commanded attention at the beginning of the Industrial Revolution are still undermining the health of workers. Substantial numbers still fall victim to ancient industrial poisons such as lead and mercury. Workers in the dusty trades still contract the pneumoconioses. In some cases, this toll of occupational disease results from failure to apply known preventive methods--through ignorance, apathy, or a false sense of security. In other cases (as for example, the pneumoconioses) the best available engineering controls, conscientiously applied, have not succeeded in completely eradicating the disease; obviously our knowledge of either the cause or the control is incomplete. Little is known of the subtle effects of chronic, low-level exposure to industrial poisons.

Chronic Disease.--New scientific knowledge points to hitherto unsuspected cause-and-effect relationships between occupational exposures and many of the so-called chronic diseases--cancer, respiratory ailments, allergies, heart disease, and others. In some instances, the relationship appears to be direct: asbestos, ionizing radiation, chromates, and certain dye intermediaries, among others, are unmistakably indicted in the genesis of cancer. In other cases, occupational exposures are implicated as contributory factors. The distinction between occupational and non-occupational illness is growing increasingly difficult to define. Certainly, in any consideration of the whole man, the occupational environment must be regarded as a major influence.

Lack of Preventive Health Services.--In-plant preventive health services are available only to the favored few among American workers. No more than 20 percent of the work force is employed in plants where "employee health services" are provided, and in many cases these are, for practical purposes, limited to emergency care. Plants employing fewer than 500 employees (and these constitute 99 percent of all establishments and employ three-fourths of the work force) usually offer no health services at all. Attempts to reach this population by other public health techniques have been unsuccessful, primarily because no concerted effort has been made to make the necessary services accessible at the workplace or to direct emphasis to the special health problems of people who work.

The problems involved in bringing adequate occupational health services to the vast majority of American workers are admittedly great and are discussed in more detail elsewhere in this report. It will suffice here to point out that, with adequate leadership from the Federal government, community resources and the resources of labor and industry can be brought together to create a modus operandi for the solution of these problems.

The Shape of the Future

It is estimated that, by 1980, the American labor force will grow to 101 million. An increasing number of workers will be in the age group under 25, and the number of women workers will continue to be high. An increasing proportion of the work force will be non-white, and a relatively large number of these will be young, relatively unskilled, and inexperienced.

As a direct result of automation, large numbers of factory and office jobs will be eliminated, although many new job categories directly related to automatic processes will be created. A shift from manual-technical to eye-mind skills will be noted.

A continued decline in agricultural employment, and a shift to contract construction, service industries, and government, can be foreseen, with the greatest gain in the service industries. New industries will demand adjustment to new environments. The maritime equivalent of agriculture, for example, may be expected to increase, with factory ships, underwater television, and small submarines aiding in marine "farming" or "herding." The exploitation of maritime mineral resources will likewise extend undersea activity.

It is clear that the problems of occupational health must rapidly increase in importance and complexity. The dispersion and mobility of the service and construction work force; the increase in young, inexperienced workers; the increase in women workers, with accompanying biologic and genetic considerations; the movement of workers into new and exotic work environments; and the physiological and psychological stresses engendered by technological change--all of these will pose tremendous problems for occupational health. The very size of the future work force emphasizes the extent of the task ahead.

Current Efforts in Occupational Health

Today, there is no such thing as a "national" program in occupational health. The Division of Occupational Health of the Public Health Service exists without legislative mandate and without authority to develop or enforce any kind of national policy. Its limited resources have required it to restrict its activity to highly selective programs and projects, through which it has, however, made a substantial contribution to worker health during the last 50 years and amply demonstrated its competency and leadership in the field. Elements of occupational health are dispersed in other Federal agencies, notably the Department of Interior and the Department of Labor. Even within the Public Health Service, programs directly related to worker health reside in units outside the Division. For administrative purposes within the government, an artificial distinction has been created between occupational disease and industrial injury which obscures the total picture and impedes advancement in a number of areas--ergonomics and human engineering, and mental health, for example.

State and local occupational health resources have never been commensurate with the needs and size of the work force. Nine states have no identifiable programs in occupational health. State and local laws vary.

Industry, labor, and insurance companies all have an interest in some aspects of occupational health and have made notable contributions in the limited areas of their interest.

A great many organizations, composed primarily of professionals in the various occupational health disciplines, strive to improve competency and stimulate action in the field.

What is lacking is a unified focus of leadership with the means and the authority to integrate and intensify these diffuse--indeed haphazard--forces, and to develop and implement a truly national program of occupational health.

The Division of Occupational Health, as currently organized and staffed, conducts activities which can serve as the nucleus of a dynamic national program. It performs epidemiological, clinical, and laboratory research, conducts short-term training courses, and has initiated a system for rapid storage and retrieval of technical information. It provides technical and consultative services to States, and other Federal agencies,

industry, labor, and other groups. It disseminates a wide variety of technical and informational materials. All of these activities are vital components of a national program of occupational health and should be upgraded and expanded.

In the pages that follow we have not attempted to define in detail every aspect of a vigorous Division program. We have attempted to describe the most important new methods by which the Division can enlarge and strengthen its own activities to fulfill its proper role in the national program of occupational health.

A NATIONAL GOAL AND PROGRAM

The National Goal

The national goal in occupational health should be:

1. Elimination or control of any factor in the work environment which is deleterious to the health of workers.
2. Promotion of good health and well-being as well as prevention of illness among workers.

Achievement of this goal will directly contribute to the well-being of 80 million Americans, reduce work absence, increase productivity, and strengthen the economy. It can be achieved through broad application of industrial hygiene, based on scientific knowledge developed through research; and through preventive health services made available at or through the place of employment.

Experience in industry as well as in the military has demonstrated that good occupational health practice can accomplish significant reductions in work absence due to illness. If a national program in occupational health could reduce the annual rate of sick absence by one day, there would be, as it has been pointed out, an addition of \$10 billion to the Gross National Product.

A National Program

The Federal Government should activate a dynamic program, based upon the concept of a tri-partite effort--of management, labor, and government--with responsibility and resources for leadership assigned to the Division of Occupational Health, Public Health Service. The program should strive to bring the benefits of known protective and preventive techniques to all workers and to develop new scientific knowledge relating to worker health. In accomplishing this, full utilization should be made of the programs and personnel of other Federal agencies, and of State and local health departments, as well as the resources of universities and of medical and scientific communities.

A NATIONAL GOAL PROGRAM

The national goal is to achieve a high level of economic development and social progress by the year 2000. This requires a comprehensive and coordinated program of action in all spheres of life.

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A National Program

The national program should be a comprehensive and coordinated program of action in all spheres of life. It should be based on the national goal and should be designed to achieve it by the year 2000.

PROGRAM RECOMMENDATIONS

1. PLACEMENT OF RESPONSIBILITY IN THE DIVISION OF OCCUPATIONAL HEALTH

THE PUBLIC HEALTH SERVICE MUST BE GIVEN SPECIFIC LEGISLATIVE RESPONSIBILITY AND NECESSARY RESOURCES TO ALLOW THE DIVISION OF OCCUPATIONAL HEALTH TO LAUNCH AN EFFECTIVE NATIONAL OCCUPATIONAL HEALTH PROGRAM, DRAWING TOGETHER AND EXPANDING FEDERAL RESPONSIBILITIES IN THE FIELD, AND STIMULATING REQUIRED ACTIONS BY STATE AND LOCAL GOVERNMENTS, LABOR, AND INDUSTRY. IT SHOULD DIRECT ITS EFFORT TOWARD (1) THE EXTENSION OF HEALTH PROTECTION AND PREVENTIVE SERVICES TO ALL AMERICAN WORKERS AND (2) THE DEVELOPMENT OF MUCH NEEDED SCIENTIFIC KNOWLEDGE RELATING TO OCCUPATIONAL HEALTH HAZARDS AND DISEASES. SPECIFIC PROGRAM ACTIONS--SOME OF THEM REQUIRING THAT NEW RESPONSIBILITIES BE VESTED IN THE DIVISION OF OCCUPATIONAL HEALTH--ARE OUTLINED IN THE FOLLOWING ITEMS.

The Responsibility for Leadership

No area of public health has stimulated so wide a range of professional interest as has the field of occupational health. No subject field is impinged upon by more professional organizations (Appendix G), voicing their concern and attempting to remedy the existing situation. Moreover, it is difficult to conceive of a subject which more directly involves the interest of all sectors of the American social and economic scene.

In the face of this interest and activity, the anachronism exists that there is no national program to bring these interests into focus and to assure the social and economic benefits that can be achieved by a broad attack upon problems of worker health.

It is apparent, furthermore, that a properly designed program of occupational health could provide preventive health services to the adult population in an effective and efficient manner. Attempts to reach this population by other public health techniques have encountered almost insurmountable obstacles and yielded relatively small results in proportion to the effort involved.

The Federal Government has definite responsibilities in the field of occupational health. The chemical and physical hazards which characterize modern industry are not the problem of a single employer, a single industry, nor a single State jurisdiction. The spread of industry and the mobility of the work force combine to make the health of the worker truly a Federal public health problem. Unfortunately, although Federal responsibility in this area has long been recognized in principle, Federal action has been insignificant indeed.

It is evident that there is a willingness for, as well as a demand that, the Federal Government assume this leadership role. It is also evident that there are tremendous resources outside the Federal Government that can be brought to bear upon the problem of the health of the American worker if leadership is forthcoming. These factors lead us to conclude that a relatively small investment on the part of the Federal Government can produce large dividends for the American people.

The Opportunity for a Partnership

In the course of discussions growing out of this study, certain attitudes were so widely evidenced that important generalizations can be made:

1) Industry is clearly concerned with the importance of occupational health and generally takes the position that it will not knowingly injure or contribute to the ill health of its employees. This finds positive expression in its increasing investment in employee health services, which now represents an annual figure of more than \$320 million. As will be shown later, even this large investment falls far short of achieving its purpose because of its concentration in big industry and through failure to use the investment to achieve adequate preventive services.

2) Labor, with its own funds, has attempted to meet the needs of workers in industries where the characteristics prevent delivery of services by the employer. Through services, and through demonstration projects, organized labor has developed significant patterns applicable to the delivery of occupational health preventive services. It is evident that wages and benefits are no longer the single focus of the labor movement and that the improvement of working conditions is becoming a more important, if not essential, objective. This is not only seen at the bargaining table, but also in the drive for health and safety legislation at the Federal level and in the States.

3) The growing group of trained professionals in a variety of organizations with interest in occupational health is prepared to give a new impetus in the field.

4) The awakening interest of States in the development of occupational health programs, following almost 20 years of deterioration and neglect, indicates an awareness of State responsibility in this area. We are convinced from our discussions with State health officers, as well as by formal actions taken by the Association of State and Territorial Health Officers, that there is a demand for action now and a feeling that occupational health has been too long neglected.

5) The Division of Occupational Health of the Public Health Service has the leadership and skills to change its traditional role as a small but efficient nucleus of competency studying problems on a highly selective--and frequently brilliantly executed--basis, to one of leadership in a dynamic action program. It is willing to establish national goals and missions and perform its share of those functions that fall within the area of Federal responsibility, and to coordinate its efforts with other Federal agencies. A review of the Federal establishment indicates that the Division of Occupational Health is the only Federal resource that contains the broad range of competency in occupational health upon which such an action program can be built.

This matrix indicates that there is an opportunity for development of a national program as a partnership undertaking, in which the Federal Government will make its contribution through leadership and support, and in which a coordinated effort can be expected from labor, industry, State governments, and professional communities.

2. STRENGTHENING OF STATE OCCUPATIONAL HEALTH PROGRAMS

THE DIVISION SHOULD BE GIVEN THE AUTHORITY AND RESOURCES TO REVITALIZE STATE OCCUPATIONAL HEALTH PROGRAMS BY THE GRANTING, ON A MATCHING BASIS, OF FEDERAL MONIES TO THE STATES FOR THIS SPECIFIC PURPOSE. THE DIVISION SHOULD DEVELOP STANDARDS FOR STATE PROGRAMS AND MODEL LEGISLATION AND MAKE SURE THAT ALL FEDERALLY-SUPPORTED PROGRAMS ARE ORGANIZED AND CONDUCTED IN ACCORDANCE WITH SUCH STANDARDS. DIVISION ADVISERS SHOULD BE ASSIGNED TO PHS REGIONAL OFFICES AND, WHERE NECESSARY, PERSONNEL SHOULD BE ASSIGNED TO STATES TO ASSIST IN PROGRAM DEVELOPMENT.

The development of occupational health programs at the State and local level as part of the total public health effort, with adequate funds and staff, is essential if there is to be an effective Federal-State partnership in a national program in occupational health. Currently, nine States have no identifiable programs. In forty-one with programs at the State and/or local level, less than twenty have staffs in excess of ten persons, including personnel for radiological health and, in a few States, for employee health services. Few have legislative and regulatory authority, and major shortcomings continue to be lack of trained personnel and adequate budget.

State and local programs must encompass two main elements: (1) the recognition, evaluation, prevention, and control of industrial health hazards; and (2) the health maintenance of workers through such activities as in-plant employee health services and health education programs for the detection and prevention of illness. To be effective, they must be backed by legislation giving authority for right-of-entry and investigation for potential health hazards; authority to promulgate and adopt reasonable health standards for the prevention and control of adverse working conditions and provision for an enforcement mechanism.

The occupational health program must be coordinated with other bureaus and agencies in the State which are concerned with adult health programs. There is particular need in the field of chronic diseases since the work population provides a focus of attack on these problems not found elsewhere in the community. Occupational health services must be available for all sectors of industry, including agriculture, commerce, construction, and mining.

With adequate assistance and guidance, the States can mount occupational health programs. During the time when the Division of Occupational Health had funds for State program grants, every State had an on-going program. It was only when the Federal supporting funds were eliminated that these programs began to deteriorate. The recommendations of the Association of State and Territorial Health Officers to the Surgeon General reflect continued concern about the lack of occupational health services for the working public. Moreover, the recently released report of the Association of State and Territorial Health Officers--State and Territorial Mental Health Authorities--Public Health Service Task Force of PHS grant legislation specifically spells out occupational health as one of the program areas which should be supported by the categorical grant mechanism.

If the States are to serve as the firing lines for a vigorous program of occupational health their immediate support must come from the Public Health Service regional offices, where trained specialists must be available to provide assistance and to identify special problems. This is also the means whereby the Public Health Service stimulates new programs, supervises activities for which it provides grant support, and channels new knowledge from its central labs.

In addition to Regional Office support, assignment of Division personnel to State programs will be required in a number of instances, to assist in the development and organization of occupational health activities and to provide needed technical skills. This is an important aspect of the technical assistance program and, in addition, will provide practical field experience for middle-level professional personnel.

3. FEDERAL CRITERIA

THE DIVISION SHOULD BE EMPOWERED TO DEVELOP FEDERAL CRITERIA UPON WHICH STANDARDS FOR PROTECTING THE HEALTH OF THE WORKER COULD BE BASED. EVOLVED IN CONSULTATION WITH THE ENTIRE SCIENTIFIC AND TECHNICAL COMMUNITY, THESE CRITERIA WOULD SERVE AS TECHNICAL GUIDES DOCUMENTING THE RELATIONSHIP OF SPECIFIC EXPOSURES TO HEALTH. THEY WOULD BE AVAILABLE TO STATES TO USE IN CARRYING OUT THEIR OCCUPATIONAL HEALTH RESPONSIBILITIES. INCLUDED WOULD BE CRITERIA FOR INDUSTRIAL EXPOSURE TO CHEMICAL AND PHYSICAL HAZARDS AS WELL AS STANDARD METHODS FOR MEASURING AND ANALYZING ENVIRONMENTAL STRESSES. THE DIVISION'S AUTHORITY SHOULD EXTEND ALSO TO ESTABLISHMENT OF LABELING STANDARDS FOR INDUSTRIAL CHEMICALS TRANSPORTED BETWEEN STATES AND REQUIRE COMPLIANCE WITH SUCH STANDARDS WHEREVER FEDERAL JURISDICTION EXISTS. THIS IS AN AREA OF INDUSTRIAL AND PUBLIC HEALTH PROTECTION WHICH IS AT PRESENT OUTSIDE THE JURISDICTION OF ANY FEDERAL AGENCY.

The most pressing need is for criteria for safe exposure to chemical contaminants. Threshold limit values have been developed for relatively few materials and are continually in need of review and revision. Progress, though considerable over the past decade, is still inadequate to keep pace with the growing number of toxic industrial chemicals and requires that the Division assume direct leadership and responsibility in developing exposure criteria. In these activities, as well as those mentioned below, the Division of Occupational Health should call upon all of the scientific community to aid in the development and review of existing and newly formulated criteria.

There is a serious deficiency in criteria for physical hazards--i.e., noise, vibration, extremes of temperature and humidity, effects of parts of the electromagnetic spectrum including visible light, and extremes of pressure. The Division is the principal national resource in these areas and should be responsible for the development of appropriate criteria.

To give meaning to these criteria, uniform methods of measuring exposures and applying the criteria must be developed. The Division should, therefore, act as the central standards setting and compliance testing organization for industrial hygiene instrumentation.

Insufficient information about the known hazards of materials used in the industrial environment continues to cause serious problems, and the Division, with established proficiency in the field of toxicology, should have responsibility for developing standards for the labeling of manufacturing materials sold in interstate transportation.

Much of the Division's work has direct implication to the health of the general public, and this will be especially true in the development of exposure criteria for chemical and physical stresses. Public hazards, such as the solvents used in coin-operated dry cleaning establishments, community noise, mercury compounds in paint, and carbon monoxide, are analagous to hazards in the industrial situation. As a logical corollary of industrial standards development, the Division of Occupational Health should be empowered to include in its activities establishment of criteria for public exposure to aid other public health agencies in the control of such hazards.

4. DIRECT FEDERAL OCCUPATIONAL HEALTH SERVICES

THE DIVISION SHOULD BE RESPONSIBLE FOR ASSURING THE PROVISION OF ADEQUATE OCCUPATIONAL HEALTH SERVICES TO FEDERAL EMPLOYEES AND FOR ENFORCING FEDERAL STANDARDS WITHIN FEDERAL ESTABLISHMENTS. THIS RESPONSIBILITY FOR OCCUPATIONAL HEALTH SERVICES SHOULD EXTEND ALSO TO BENEFICIARIES OF PUBLIC HEALTH SERVICE MEDICAL SERVICES, SUCH AS MERCHANT SEAMEN, THE COAST GUARD, AMERICAN INDIANS, AND FEDERAL PRISONERS, AND TO MIGRANT WORKERS. IT WOULD BE DISCHARGED PRIMARILY THROUGH THE EVALUATION AND CERTIFICATION OF PROGRAMS, TECHNICAL CONSULTATION, AND TRAINING, WITH THE VARIOUS DEPARTMENTS AND AGENCIES ASSUMING PRIMARY RESPONSIBILITY FOR THE CONDUCT OF THE PROGRAMS. DIRECT ASSIGNMENT OF DIVISION PERSONNEL WOULD BE KEPT AT A MINIMUM. LEGISLATIVE OR ADMINISTRATIVE ACTION GIVING THE DIVISION OF OCCUPATIONAL HEALTH AUTHORITY TO ACT IN THESE FEDERAL AREAS IS SPECIFICALLY RECOMMENDED.

The Federal Government has the responsibility to provide directly either employee health or medical services for its employees, migrant workers, and a sizable group of other Federal beneficiaries.

Federal Employee Health Services

The Public Health Service, through its Bureau of Medical Services, acts as a consultant to other Federal agencies which provide health services to their employees. In June 1965, the President instructed his Cabinet to reduce illness among Federal employees by providing occupational health and safety services, and the Bureau of the Budget issued a circular specifying the services to be provided:

1. Pre-placement examinations
2. In-service examinations
3. Administration of treatments and medications either prescribed by the employee's personal physician or by a physician providing medical care in performance-of-duty injury or illness cases in the Federal Employees' Compensation Act
4. Appraisal of health hazards in the work environment
5. Specific disease screening examinations and necessary immunizations
6. Health education

Based on industry experience, the provision of these services to all Federal employees will cost in the neighborhood of \$50 million, which will be paid out of the operating funds of the various Federal agencies.

The new program offers more than an opportunity to bring expanded health services to over two million Federal workers. It should serve as a model on which State and local governments, and industry, can pattern occupational health services for their own employees. It should achieve standards of excellence which can and should be applied to other groups.

The Division of Occupational Health, as the national authority in its field, is uniquely qualified to provide expert guidance to Federal establishments and to assure the successful integration of environmental controls and medical surveillance into a work-related preventive health program. In fact, under present administrative arrangements, problems concerning environmental health standards or evaluation of health service against such standards are normally referred by the Bureau of Medical Services to the Division of Occupational Health. It seems only logical that the Public Health Service responsibility in the new, broader program, with its emphasis on occupational health, should be lodged in that Division.

A more authoritative role for the Public Health Service in the Federal Employee Health Program is proper and desirable. If consultation were mandatory, rather than permissive, and if the Service were empowered to evaluate and certify Federal programs, it would be possible to provide Federal services which could serve as a model to employers throughout the nation. Moreover, the Federal establishment would serve as a practical laboratory for the development of standards for health services; for example, standards of health characteristics related to employability, and employability of pregnant women, are badly needed.

In order to conduct a successful Federal program, a substantially larger professional staff than is assigned to the present Secretariat would be required. However, it is contemplated that, as at present, agencies would staff and administer their own programs, with assignment of Public Health Service personnel kept to a minimum.

Employed Beneficiaries of Federal Medical Services

The Public Health Service has responsibilities in the medical field for merchant seamen, members of the Coast Guard, Federal prisoners, and American Indians, among others. At the present time, emphasis is almost entirely curative, with no provision for preventive medical services or environmental controls. This is paradoxical, particularly in the case of merchant seamen, since the Public Health Service was founded to serve our early mariners. The Division of Occupational Health should be given responsibility and authority for assuring that preventive health services are integrated into existing programs and that industrial hygiene inspections are made on the vessels, or other workplaces, of these groups.

Health Services for Migrant Workers

The Public Health Service has been given certain responsibilities for the health of migrants. Although the life of these workers is more job-oriented than any other sector of the working public, existing health programs do not include any sort of occupational health services. Furthermore since migrant families customarily live on the jobsite, the most efficient and effective method for protecting the health of these workers is through the workplace. The Division of Occupational Health should be given responsibility and legislative authority for developing occupational health services for migrant workers. Such services should supplement, rather than impinge upon, the existing program for migrant workers which is currently the responsibility of the Division of Community Health Services.

5. ENFORCEMENT OF THE WALSH-HEALEY PROVISIONS

THE DIVISION, BY NEGOTIATION OR LEGISLATION, SHOULD BE GIVEN A CLEARLY DEFINED ROLE IN THE PROMULGATION OF THE HEALTH AND ACCIDENT PREVENTION PROVISIONS OF THE WALSH-HEALEY ACT, WHICH IMPOSE CERTAIN REQUIREMENTS UPON FEDERAL CONTRACTORS. THE DIVISION MUST BE IN A POSITION TO PROVIDE PROFESSIONAL SKILLS TO DEVELOP FEDERAL STANDARDS, INSURING HEALTHFUL WORK CONDITIONS FOR THAT VERY LARGE PART OF THE WORK FORCE EMPLOYED BY FEDERAL CONTRACTORS.

The Walsh-Healey Public Contracts Act states that any contract with the Federal Government for more than \$10,000 may not be performed nor the material, supplies, articles, or equipment manufactured or furnished under working conditions which are unsanitary or dangerous to the health and safety of employees engaged in the performance of the contract.

This law provides an opportunity to assure occupational health services to a very large number of American workers. Unfortunately, this opportunity has not been exploited, primarily because the necessary manpower and funds for enforcement were not available at either the Federal or State level.

If an effective national occupational health program is to be mounted, the potentialities of the Walsh-Healey Act must be realized. The Department of Labor, the agency administratively responsible for the Act, and the Division, the technical resource, must develop more comprehensive standards and regulations to fulfill the intent of the Act. Then there must be some type of inspection and enforcement.

Congress has indicated its reluctance to approve more health and safety inspectors in the Department of Labor and would probably not do so for the Division even if it were given complete responsibility for the safety and health provisions. This is a reasonable position since it would be difficult if not impossible to provide Federal inspectors for the more than three million workplaces covered by the Walsh-Healey Act. When State occupational health programs are broadened and improved, this responsibility could constitute a significant part of their activities. If, however, the States are unable or reluctant to assume this responsibility, the Federal Government must be prepared to do so, acting more aggressively than in the past.

The Division enjoys a good working relationship with the Department of Labor. If, however, the State occupational health programs do the field work under the Walsh-Healey Act, the Division's role in developing standards and regulations must be on a formal rather than consultative basis. It would be inconsistent and confusing if the Division, which is responsible for developing and supporting the State programs, did not have a clearly defined role in what should become their major activity.

6. FEDERAL GRANTS AND CONTRACTS

THE DIVISION SHOULD DEVELOP STANDARDS TO ASSURE THAT RESEARCH BEING DONE FOR THE PUBLIC HEALTH SERVICE UNDER GRANTS OR CONTRACTS IS CONDUCTED UNDER SAFE AND HEALTHFUL CONDITIONS. IT IS RECOMMENDED THAT SERIOUS CONSIDERATION BE GIVEN TO ADDING A CLAUSE TO ALL DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE CONTRACTS AND GRANTS WHICH WOULD REQUIRE CERTIFICATION THAT SUCH STANDARDS ARE OR WILL BE MET. CONSIDERATION SHOULD ALSO BE GIVEN TO EXTENDING THIS CERTIFICATION TO ALL FEDERAL GRANTS AND CONTRACTS WHICH DO NOT FALL UNDER THE WALSH-HEALEY ACT. IF AND WHEN SUCH PROVISIONS ARE ADOPTED, THEY SHOULD INCLUDE AUTHORITY TO DELEGATE UNDER CONTRACT INSPECTION ACTIVITIES TO STATE PROGRAMS WITH DEMONSTRATED COMPETENCE.

There is adequate precedent for conditioning Federal grants and contracts. Some years ago the Children's Bureau conditioned its grants to State governments with a clause calling for a merit system for State employees. The Walsh-Healey Act says in effect that the Government will not buy goods that have been manufactured under unsafe or unhealthy conditions. A clause in the Federal Water Pollution Control Construction Grants requires assurance that installation will be properly maintained and operated before the grant is approved.

The inclusion of the proposed condition in Department of Health, Education, and Welfare grants and contracts would have a very important impact upon the national occupational health problem, assuring protection and preventive services to thousands of employees of universities, schools, hospitals, and State governments. In many of these institutions, particularly universities and hospitals, the resources for occupational health programs already exist, and some of the hazards are well known. The situation on university campuses is reflected in a recent resolution of the Campus Safety Association requesting the Division "to study or consider the serious problem of disposing of waste chemicals and experimental biological wastes without injury to personnel or pollution of the air or water."

If the nation is to make a major breakthrough in the field of worker health, however, the grants and contracts of all other Federal departments should also require the receiving institutions to have acceptable occupational health programs. Every effort should be made to achieve this end.

In administering the provisions of this proposal, application of certain minimum standards of operation will be necessary. The Division's approach, however, should not be a dictatorial one. Its full technical and consultative resources should be made available to aid in the development of adequate programs. Wherever possible, field inspection and enforcement should be delegated to State agencies with demonstrated competence.

7. WORKERS IN INTERSTATE TRANSPORTATION

THE DIVISION SHOULD HAVE SPECIFIC AUTHORITY TO ENFORCE FEDERAL HEALTH STANDARDS IN INDUSTRIES ENGAGED IN INTERSTATE TRANSPORTATION. THE FEDERAL GOVERNMENT HAS THE ONLY CLEAR JURISDICTION COVERING THIS SEGMENT OF INDUSTRY BUT, EXCEPT IN A FEW CASES SUCH AS AIRLINE FLIGHT CREWS, HAS FAILED TO EXERCISE ITS RESPONSIBILITY FOR OCCUPATIONAL HEALTH. NO POLITY ACCEPTS OR ASSUMES FULL RESPONSIBILITY FOR ON THE JOB HEALTH OF RAILROADERS, TRUCKERS, OR AIRPORT WORKERS, FOR EXAMPLE.

Extending occupational health service for this group of workers presents many practical problems. As a general rule, States either do not have, or fail to exercise, authority to protect the health and investigate the work environment of these workers. Although other factors relating to their employment come under the general regulations of the Interstate Commerce Commission, there is no Federal program of occupational health, except in the case of airline flight crews, who are under the jurisdiction of the Federal Aviation Administration.

An extreme but very real example of the need in this area is the situation at airports. There is no single jurisdiction in their management, with Federal, State, and local governments and private industry all concerned. The problems--noise, heat, sanitation, toxic gases, and a host of others--can affect not only the employees but also the general public.

The transportation workers need a wide variety of occupational health services, from periodic physical evaluations to sanitation, and there are increasing requests for the Division to act in this field. Again, there are several ways by which this could be done. One would be a coordinated program between the Division and the I.C.C. with the Division being either given responsibility for occupational health services or acting in a consultative role. The other alternative would call for new legislation to give the Division direct responsibility for development and operation of effective programs. Given this authority, the Division could then either work directly with the individual industries and other organizations or delegate authority to State agencies with demonstrated competence.

8. REACHING THE WORKER

THE DIVISION SHOULD BE GIVEN AUTHORITY AND FUNDS FOR DEMONSTRATION GRANTS TO STIMULATE THE DEVELOPMENT OF NEW AND EFFECTIVE METHODS FOR PROTECTING THE HEALTH OF WORKERS NOT ACCESSIBLE THROUGH DIRECT FEDERAL AUTHORITY. THE LACK OF ADEQUATE OCCUPATIONAL HEALTH PROTECTION FOR WORKERS IN SMALL INDUSTRY AND AGRICULTURE (WHICH TOGETHER EMPLOY APPROXIMATELY 80 PERCENT OF AMERICAN WORKERS) CONSTITUTES A NATIONAL PROBLEM OF SUCH GRAVITY THAT DYNAMIC AND IMAGINATIVE FEDERAL ACTION IN THIS AREA IS URGENTLY NEEDED. SUPPORT SHOULD BE GIVEN TO SHORT-TERM DEMONSTRATION PROJECTS BY NON-PROFIT AGENCIES, MEDICAL GROUPS, INDUSTRY, LABOR, FARMERS' ORGANIZATIONS, OR COMMUNITY GROUPS. A STRONG FEDERAL PROGRAM OF CONSULTATIVE AND TECHNICAL SERVICES IS ESSENTIAL.

Small Industry

About 75 percent of employed Americans work in the nearly 3 million small industries, businesses, or farms (under 500 employees each) where, with a few notable exceptions, little or no occupational health surveillance or services are provided.

Bringing health services to the employees of small industry, will require, first of all, establishment of adequate occupational health divisions and industrial hygiene laboratories at the State level, the minimum standards for which should be developed by the Division of Occupational Health.

If workers in small establishments are to be assured a safe and healthful work environment, and if owners and managers of small establishments are to be assisted in providing basic occupational health services to their employees, action programs also will have to be developed at the community level. This means incorporation of occupational health services into the activities of county, city, and local health departments and health agencies as a definite program element. Occupational health programs at the community level can identify needed services in small industry; promote, organize, and coordinate community resources to meet these needs; and carry out action programs to see that the needs are ultimately met.

To meet these needs, short-term demonstration grants to suitable nonprofit agencies are required to show the way toward solutions to the problem of providing occupational health services to small plant employees. Well planned projects with good prospects of ultimate support by industry, labor, community, or other sources would hasten the development of workable methods of delivering needed services and at the same time test the feasibility of economic support by community or other sources.

In the absence of organized health services within the industries themselves, the local governmental health agencies must provide direct services to meet minimum needs. Examples of types and kinds of direct services needed in small industry are:

1. Periodic inspection of the worksite to evaluate conditions affecting health, and to advise and assist management in the correction of deficiencies.
2. Occupational health advice and assistance when new processes with health implications are planned or put into operation.

3. Adequate facilities and trained personnel for on-the-job first aid.
4. Health education and health promotion programs for workers, to be delivered at or through their places of employment.
5. Development of part-time nursing services where a full-time occupational health nursing service is not feasible.
6. Development of programs, in cooperation with practicing physicians in the community, so that small industries may obtain necessary medical services, such as preplacement medical examinations, emergency medical services, and medical surveillance to employees in unusual or hazardous occupations.

The promotion of occupational health as a responsibility and effective activity of State and local health departments will be a formidable task. As in the case of air pollution control and radiological health, this will require large scale Federal assistance in the forms of grants-in-aid for occupational health, the detailing of Public Health Service personnel to organize and advise on program operation, the provision of technical resources, and the development of standards, goals, and methods applicable to the occupational health activities of State and local health departments.

Agricultural Workers

The large modern farm is in a sense a great machine shop and chemical distribution plant where potential hazards to health and safety are great, the accident rate is high, and diseases of toxic origin represent a very serious problem. Since the health of farm workers is as important to the nation as that of those in industry, occupational health services should not be solely urban and industrially oriented.

Bringing occupational health services to farm workers involves some different problems than reaching the worker in the metropolitan areas. Some of the difficulties can be overcome if county extension agents can be enlisted in a farm occupational health program. Areas of mutual concern--farm chemicals, for example--already exist between health and agricultural officials, and short-term occupational health training programs could be expanded to include courses designed for county agents.

A legal and financial basis to support such a program could be developed through Walsh-Healey-type legislation which would assure that agricultural goods purchased or supported by the Federal Government would be grown, harvested, and marketed under safe and healthful work conditions.

9. RESEARCH

THE DIVISION SHOULD SUBSTANTIALLY EXPAND ITS IN-HOUSE AND EXTRAMURAL RESEARCH ACTIVITIES TO PERMIT THE DEVELOPMENT, AND CONTINUOUS REVIEW, OF CRITERIA FOR INDUSTRIAL EXPOSURE; TO EXPAND CLINICAL AND EPIDEMIOLOGICAL STUDIES; TO DEVELOP NEW INSTRUMENTATION AND METHODS FOR CONTROLLING HEALTH HAZARDS; TO IMPROVE UNDERSTANDING OF THE BIOCHEMICAL AND PHYSICAL MECHANISMS INVOLVED IN OCCUPATIONAL ILLNESS; AND TO PROVIDE DIRECT TECHNICAL SERVICES TO OTHER AGENCIES. THESE ACTIVITIES SHOULD UTILIZE THE FULL RANGE OF SKILLS AVAILABLE IN THE SCIENTIFIC COMMUNITY.

The Division's field studies of occupational disease on an industry-wide basis should be expanded. To facilitate these studies, the Surgeon General should have the necessary authority to examine work records, the work place, and workers in these inter-State industries.

THE DIVISION SHOULD EXPAND ITS RESEARCH AND TRAINING FACILITY IN CINCINNATI AND ITS APPALACHIAN LABORATORIES FOR OCCUPATIONAL RESPIRATORY DISEASE. IT SHOULD ESTABLISH REGIONAL LABORATORIES TO PROVIDE RAPID TECHNICAL ASSISTANCE TO STATES.

TO ACHIEVE THESE OBJECTIVES, IT IS SPECIFICALLY RECOMMENDED THAT RESOURCES FOR RESEARCH GRANTS, AS WELL AS FOR DIRECT RESEARCH OPERATIONS, BE INCREASED.

The modern worker encounters health hazards which involve complex, often synergistic, interactions of numerous physical, chemical, and even psychological agents. An all-out multidisciplinary research effort is required to identify and control these hazards.

The Division of Occupational Health must strengthen its in-house research competency and expand its range of scientific disciplines to meet the needs of such an effort. This need arises from the requirement that directed research on a very large scale will be essential to the development of standards, identification of substances, and development of methods for control. Such research cannot be conducted through the grants mechanism without serious disruption to the scientific community and possible deleterious effects on basic research of importance to this and other programs.

At the same time, the program of research grants needs to be greatly expanded to draw on the resources of universities and other research institutions, whose growing competencies in the occupational health field are currently under-utilized. Grant-supported research will include many of the more sophisticated studies required to meet problems of the near future as well as research along classical occupational health lines.

Research in occupational health is directly primarily at finding answers to specific, urgent questions relating to human exposures in the work environment. In developing solutions to these special problems, the occupational health scientist utilizes a broad range of biological and physical laboratory resources. In addition, he measures and analyzes environmental factors in the actual workplace, and he observes, and attempts to evaluate, the effect of varying degrees of exposure on the actual population at risk.

His unique, categorical approach requires that he integrate clinical and environmental findings with information developed in the laboratory and develop means of immediate and direct application of new knowledge to the workplace. The research to be conducted by the Division of Occupational Health will in many cases complement, in others will draw upon, studies performed by the National Environmental Health Sciences Center, whose focus is the long-range investigation of basic mechanisms involved in environmental stress.

A few of the more pressing requirements in research are described in the section on Urgent Problems.

Laboratories

The Division of Occupational Health research facility in Cincinnati would be expanded to become a national laboratory where the most complicated and difficult analyses can be performed and where key staff can be assembled for spot assignment to deal with unusual problems or emergencies arising in the States. This type of facility is dictated by the need for economical use of scarce manpower in highly specialized fields and of the sophisticated and expensive equipment needed in modern occupational health research.

Somewhat less elaborate supporting regional laboratories will be needed in those areas of the country that are not highly industrialized. The technical staff and equipment in these installations will not include all the specialties of the national laboratory but would still represent a breadth rarely justified in State programs.

The Appalachian Occupational Respiratory Disease Center

The Center established in West Virginia to perform clinical and basic science investigations into occupational respiratory diseases should be expanded, applying to the problem a wide variety of scientific disciplines.

Among significant segments of the working population, particularly those in the dusty trades, job exposures are known to cause respiratory disease. The Division's recent study of bituminous coal miners in the Appalachian region has shown that one miner out of ten has coal miners' pneumoconiosis and that about one in five inactive miners has the disease. In older men, the rate of disease is much higher. Bronchitis and emphysema are also major health hazards in this occupational group. Silicosis is still a hazard to metal miners and other groups, and recent evidence has shown asbestos inhalation to be associated not only with pneumoconiosis but with the development of lung cancer.

Although the pneumoconioses have been the subject of medical and engineering study for a good many years--and substantial progress has been made in dust control--we are still lacking much fundamental knowledge necessary to a clear understanding of these diseases. For example, we do not know the mechanism of toxic action of the various irritant dusts, the role played by auto-immunity, or the cause of seeming hypersusceptibility among some individuals. It is clear that long-range prospective studies are essential to their understanding, control, and therapy. It is clear, also, that many of the study findings would be directly applicable to the problems of respiratory disease of non-occupational nature. The variation in incidence of emphysema and other respiratory disease among different occupational groups suggest that work-related factors are significantly implicated in these "chronic" illnesses.

10. OCCUPATIONAL HEALTH CLINICS

THE DIVISION SHOULD SUPPORT AND AID IN THE DEVELOPMENT OF OCCUPATIONAL HEALTH CLINICS IN HOSPITALS, UNIVERSITIES, AND COMMUNITY ESTABLISHMENTS. THE CLINICS WILL PROVIDE CLINICAL-MEDICAL SERVICES AND FURNISH AN OPPORTUNITY TO USE ACCIDENTAL HUMAN EXPOSURES IN EVALUATION OF TOXIC HAZARDS AND VALIDATION OF INDICATOR SYSTEMS FOR SUBACUTE TOXIC EXPOSURE. THEY WILL PERFORM OTHER RELATED RESEARCH AND DEVOTE SPECIAL ATTENTION TO PROBLEMS PECULIAR TO THE GEOGRAPHIC AREA SERVED. IN ADDITION, THE CLINICS WILL PROVIDE SITES FOR ADVANCED AND SPECIALIZED TRAINING OF OCCUPATIONAL HEALTH PERSONNEL.

Through arrangements sponsored and assisted by the Division of Occupational Health, such clinics could be established in connection with medical schools or research institutions where special competencies exist or need to be developed. Cooperative arrangements should be developed with other divisions of the Public Health Service directed toward establishment of such clinics in selected Public Health Service and Indian hospitals to serve beneficiaries of PHS medical services.

The clinics will serve an important research function since they will make possible in-depth clinical study of human beings accidentally exposed to harmful substances or factors in the workplace. Although the development of models in the laboratory and controlled animal experimentation can provide important clues to human reaction, these remain approximations only until they can be clinically tested. No effective means exists today to perform this extremely important phase of occupational health research.

The clinic staff will be in a position to discern and identify new or unusual medical problems arising from changes in industrial processes and environments. In addition, they will bring the benefits of prompt diagnosis and the most effective therapy to workers suffering from occupational diseases. Expert consultative services could be made available to community practitioners and industrial medical departments. Furthermore, the efficacy of newly developed therapeutic techniques can be tested through clinical trials, an area of investigation which has lagged seriously because of a lack of clinical facilities. It should be pointed out, also, that supervised experience in the clinical situation is essential to the development of highly trained personnel in the various occupational health disciplines.

11. MEASURING THE NATIONAL OCCUPATIONAL HEALTH PROBLEM

THE DIVISION SHOULD DEVISE AND PUT INTO PRACTICE IMMEDIATELY THE MOST EFFECTIVE METHODS POSSIBLE FOR MEASURING AND ANTICIPATING THE NATURE AND EXTENT OF THE NATIONAL OCCUPATIONAL HEALTH PROBLEM. ITS METHODS SHOULD INCLUDE A SUBSTANTIAL EXPANSION OF EPIDEMIOLOGICAL STUDIES, SAMPLE MONITORING OF WORK ENVIRONMENTS, ANALYSIS OF TECHNOLOGICAL TRENDS, STATISTICAL STUDIES, AND DEVELOPMENT OF OCCUPATIONAL DISEASE REPORTING MECHANISMS THROUGH WORKMEN'S COMPENSATION COMMISSION, THE NATIONAL HEALTH SURVEY, AND THE MEDICAL CARE FOR THE AGED PROGRAM. THE DIVISION SHOULD ALSO PROVIDE LEADERSHIP TO EMPLOYERS IN THE DEVELOPMENT OF UNIFORM RECORDING AND REPORTING PROCEDURES FOR DISEASE PREVALENCE AND MORTALITY IN EMPLOYED GROUPS.

It is almost inconceivable that this nation, with its vast resources and technical skills, has never developed a comprehensive picture of the work environment to determine the relationship with the health status of its productive work force. Nor are all the health hazards to which its workers today are exposed identified clearly to determine the presence and trends of disease observed and the threat of the hazards of the workplace to nearby citizens who can also be exposed to some of these dangers and nuisances.

The only agencies presently partially aware of the incidence of injury and disease arising during the course of and out of employment are some State Workmen's Compensation Bureaus or the Labor Departments and a few private insurers where such coverage is permissible in lieu of Workmen's Compensation coverage.

Accumulation of such information would or could involve seven activities:

(1) Surveillance and Comparative Epidemiological Studies. The Division, through its retrospective statistical and epidemiological studies of the Bureau of Old Age and Survivors Insurance records has developed data on levels of disease in working selected populations, correlations between occupation and disease, and trends and variations in the health of the working populations. The continuation of such studies would be a cornerstone of the national occupational health survey. In addition, it is necessary to carry on comparative epidemiological studies in a wide variety of industries to reveal differences in general sickness patterns in various groups of industrial workers who differ not only in occupation but in other socio-economic characteristics and in physiological inheritance, as well.

Uniform recording and reporting procedures on the part of industry and other employers on disease prevalence and mortality in employed groups would be a great asset in studies of this type, and the Division should assume leadership in developing such procedures. Moreover, the Division should also aid, through development of protocols and methodology, studies by industry of chronic exposures to industrial materials and processes. Such investigations are needed particularly to reveal the contributions, if any, which different stresses and conditions of work make to the common illness (as distinguished from specific occupational disease) experience of adults and to provide needed information on which to build programs of preventive attack on the chronic, degenerative diseases of aging adults, whether there is evidence of work association or not. This approach is particularly required to answer these questions: Do the stresses

of the job and work environment influence in any way (good or bad) the potential for illness and chronic disease in aging adults, such as coronary heart disease, chronic non-specific lung disease, etc. If there is a relationship, is it a primary one (i.e., environmental agents identified as true causative agents) or do these work factors act as secondary contributors which do not cause, but increase the potential for and aggravate the development of such chronic diseases, with the vitality of the host playing the predominant role in disease development? On the basis of such discovered relationships, can we develop and demonstrate the effectiveness of preventive measures involving appropriate corrections of the work situation which, on application, will lower the level of illness in the work population?

(2) Monitoring. Several investigations by the Division have shown that industrial hygiene inspections based on a carefully selected sample can give data on the number of employees at risk and information on the hazardous working conditions in the community. They have also confirmed suspicions that large numbers of workers are exposed to hazards that need immediate correction. Plans for Fiscal Year 1967 include the beginning of an annual sample of at least one-tenth of one percent of the total workplaces in the country. Preliminary emphasis will be placed on known problem areas, such as the chemical industries, transportation workers, and on small industrial plants with follow-up in areas where health hazards are sufficiently great to warrant corrective action. This technique can and should also be used to help identify presently unknown problem areas, provide a basis for establishing program priorities and measuring occupational health achievements.

(3) Intelligence. The Division has already developed the basic approach needed to anticipate health hazards resulting from new manufacturing processes and technological changes and has techniques ready for application in such high-risk industries as chemical processing and rocket propulsion systems. To get this knowledge, two activities are involved. One requires review of BOASI and other records to determine particular patterns of disease which relate to occupational health. The second calls for continual study of industrial, Federal, and university research activities to detect products or processes which may emerge from the laboratory into production and pose potential health hazards. Given this knowledge, controls or process changes to protect the health of the worker can be developed before production has started. The cost of taking protective steps at the design or construction stage is much less than having to make changes later after health problems arise.

These same techniques, in addition to anticipating new problems, can also be used to determine unknown risks in established industries and processes. In view of the industrial situation today where a potentially toxic material is introduced every twenty minutes, this program should be given highest priority.

(4) Liaison with Labor Departments and Industrial Commissions. It is most appropriate that the Division of Occupational Health of the U.S. Public Health Service, working with and through the Department of Labor, stimulate the passing on of Workmen's Compensation claims for occupational disease and to the State occupational health agencies and through them to the Division of Occupational Health, USPHS, in Washington.

(5) Liaison with the National Health Survey. Relationships of a more effective nature should be established with the already on-going National Health Survey to specifically include in the future more information on work history and work-related illness, as well as illness in general in the working population.

(6) Medicare. This national program and its possible extension to the age groups of our productive workers suggests the need for planning now for the inclusion of occupational health histories in record forms, reporting of occupational disease when found, and access by the Division of Occupational Health to these records for studies of the occupational health problems that have occurred in the past in the age 65 and above in our population.

All of foregoing activities are essential if the national program in occupational health is to be developed in an orderly and intelligent manner. They are necessary to anticipate problems arising from the manufacture of new materials or process changes and to allow time for control measures to be introduced before workers are exposed. They indicate the need for comprehensive industry-wide surveys, such as on coal and asbestos, to determine prevalence, seriousness, and, with long-range followup, incidence of disease. Most important of all, they assess the adequacy of existing methods of control and point the way toward areas needing intensive research into basic disease mechanisms to provide the information necessary to develop new methods of control.

With passage of time, these activities will effect changes in the patterns of occupational health problems and be an invaluable tool in the continuous in-depth review of the Division of Occupational Health's program accomplishments.

12. MANPOWER AND TRAINING

THE DIVISION SHOULD UNDERTAKE A BROAD PROGRAM TO DEVELOP THE MANPOWER SKILLS REQUIRED FOR A NATIONWIDE EFFORT IN OCCUPATIONAL HEALTH. IT SHOULD BE AUTHORIZED TO MAKE TRAINING GRANTS TO UNIVERSITIES AND OTHER INSTITUTIONS AND SHOULD GIVE SPECIAL ATTENTION TO A CAREFULLY COORDINATED PROGRAM OF ON-THE-JOB AND FORMAL ADVANCED TRAINING. IT SHOULD EXPAND ITS SHORT-TERM TRAINING PROGRAM, AND, AS A MEANS OF CONSERVING AND FULLY UTILIZING SCARCE SCIENTIFIC SKILLS IN THE MANY DISCIPLINES REQUIRED, IT SHOULD DEVELOP AN EFFECTIVELY TRAINED CORPS OF PARAPROFESSIONAL PERSONNEL.

The complexity of the field of occupational health is reflected in the wide range of professional disciplines already engaged in aspects of the problem. Activities at the current time require a multidisciplinary approach utilizing competencies in industrial hygiene, occupational medicine, occupational health nursing, epidemiology, toxicology, dermatology, engineering, physical and chemical analysis, physiology, and statistics.

An all-out attack on the multitude of inter-related factors affecting the health of workers will demand, not only that the number of persons skilled in these disciplines be increased, but that other professional skills be brought to bear upon the problem. Skills needed in occupational health include psychiatry, psychology, ecology, cytogenetics, clinical investigation, sociology, human engineering, ophthalmology, economics, labor statistics, electronic range of engineering, medical, public health, and social science competencies.

There is even now a serious shortage of personnel in all areas of occupational health. If an effort is to be made to bring occupational health services to any substantial proportion of the working population, a great many more industrial hygienists, occupational health physicians, and occupational health nurses will be required, and the number of scientists in even the most basic occupational health disciplines must be increased.

To meet these needs, as well as to attract and train the many new professional specialties required in occupational health, research and training grants must be made available to universities and other scientific institutions, and to operating health agencies as well, where practical field approaches to the problems of occupational health can be undertaken.

It will be necessary also for the Division's own research and training efforts to be greatly expanded and integrated with the service function. In fact, in-service training is regarded as an essential mechanism for developing the corps of professional workers needed. Persons with basic preparation in engineering, medicine, and other disciplines should be placed on the job, where, working under the supervision of experts, their own specialized skills can be developed. After this period of practical internship, formal, advanced training can be provided on a selective basis.

Even with such an expanded effort, professional resources will still remain in short supply, and it will be essential to develop in the occupational health field a supportive corps of paraprofessional personnel, competent to perform specific scientific tasks. Such personnel can be trained, for example, in the use of certain measuring or testing devices, under the supervision of a trained industrial hygienist, extending the benefits of environmental control to an ever greater number of workers.

The training of the specialized supportive corps of paraprofessional personnel can best be accomplished in the early phases of their training by selective, basic short courses to develop the skills required to support the industrial hygienist or other professional workers. Additional and continuing education can then be supplied through other short courses or extended training for specific jobs.

Short-term training for State occupational health workers also has been a successful program, and will have to be expanded in proportion to the growth of State programs. Moreover, rapidly changing technology and new knowledge from research requires constant up-dating of workers already in the field. Short-term training is also a highly useful tool in narrowing the gap between the development of new concepts and techniques and their application in the work environment.

Within the broadened concept of occupational health science envisioned by this report, the industrial hygienist will continue to be, as he is today, a key person. With his multidisciplinary skills applied directly to the detection and solution of health hazards in the work environment, his is the primary and unifying function in environmental control. The occupational nurse also plays a role of unique importance since she has the most frequent contact with the largest number of workers. Her role is one of surveillance, monitoring, ministering, and unifying. Therefore, all-out effort will be necessary to upgrade present competencies and to attract to the field industrial hygienists and nurses with modern, specialized preparation.

13. TECHNICAL INFORMATION SERVICE

THE DIVISION SHOULD STRENGTHEN AND EXPAND ITS TECHNICAL INFORMATION SERVICE TO CREATE AN EFFECTIVE NATIONAL RESOURCE FOR THE ACCUMULATION AND DISSEMINATION OF OCCUPATIONAL HEALTH KNOWLEDGE.

Currently, this Service encompasses information in occupational medicine, toxicology, physiology, occupational health engineering, and chemistry and has served both the research and technical service missions of the Division in these areas very successfully. Its placement within a research milieu greatly enhances its effectiveness in providing answers to specific technical questions and in revealing gaps in scientific knowledge. However, to meet identified and expanding technical information needs in the occupational health field, and particularly to fill its appropriate role in the International Occupational Safety and Health Information Exchange (CIS), the Service should enlarge its scientific scope and broaden the range of its services.

The Technical Information Service should be integrated with the activities of the National Library of Medicine and the Advisory Center on Toxicology of the National Research Council and the National Academy of Sciences to provide a total reference service and eliminate significant gaps presently existing in scientific information.

14. PUBLIC INFORMATION AND EDUCATION ACTIVITIES

THE DIVISION SHOULD EXPAND ITS INFORMATIONAL AND EDUCATIONAL ACTIVITIES TO PROVIDE RAPID AND EFFECTIVE COMMUNICATION OF NEW KNOWLEDGE TO OCCUPATIONAL HEALTH PROFESSIONALS, TO PROVIDE GUIDANCE TO INDUSTRY AND LABOR, AND TO ADVANCE THE HEALTH EDUCATION OF WORKERS. TO FOCUS NATIONAL ATTENTION ON THE NEED FOR WORKER HEALTH PROTECTION, A NATIONAL CONFERENCE ON THE HEALTH OF THE WORKER SHOULD BE ARRANGED AT AN EARLY DATE.

To meet the needs of the projected nationwide program, entailing the development of program and environmental criteria, an expansion of the Division's informational and educational activities will be required. In addition to development of materials to guide occupational health professionals, an expanded program of worker and management education will be required.

A more active program of public education in the implications of occupational health is believed to be justified as well, particularly in view of the unwarranted complacency which marks current public thinking. It is unfortunately apparent that the great majority of Americans, through lack of knowledge, are apathetic about the very real problems which confront them in the field of occupational health. It is widely assumed-- and this even among members of the medical and scientific communities--that the great problems of occupational health were solved when white phosphorus vanished from the match industry, when sweatshops were outlawed in the garment industry, and when mercury was replaced in the manufacture of felt hats.

There is little concern among the general public with the thousands of new industrial poisons to which workers in every industry--even in agriculture--are being exposed. Complacency is even greater with regard to old hazards--and yet mercury and lead poisonings, for example, are increasing in frequency as new uses are found for these metals. Few outside the occupational health specialty are aware of the relationship of the occupation to chronic disease. Although the potential effects of technological changes on the physical and mental health of workers are part of the parlance of every economic and social commentator, a public disposition to subject these problems to serious scientific scrutiny is oddly lacking.

We have the paradox of a major group whose health needs have been grossly neglected, and yet, who, at the same time, as the Association of State and Territorial Health Officers put it, may have "misplaced their confidence by assuming that they have no occupational hazards to their health, that the absence of public health services for them proves they are adequately protected at their work. We know that this is not true." There is need, obviously, to bring occupational health into the mainstream of the environmental and general public health effort, to alert the nation to the problems which confront it, and to stimulate in the scientific community an appreciation of the challenge and opportunity existing in the field of occupational health. A National Conference on the Health of the Worker should be arranged as a first, and dramatic, step toward accomplishing these ends.

15. CONTINUOUS PROGRAM REVIEW

THE DIVISION SHOULD ESTABLISH A SCIENTIFIC ADVISORY COMMITTEE TO PROVIDE CONTINUOUS IN-DEPTH REVIEW OF PROGRAM ACTIVITIES AND TO RECOMMEND CHANGES IN CONTENT AND EMPHASIS AS REQUIRED.

The Division of Occupational Health has the benefit of the advice of the Surgeon General's Advisory Committee on Occupational Health. This Committee advises primarily on matters of public policy and serves as a sounding board whereby the viewpoints of various sectors of society can be obtained. It is not structured to provide in-depth review of program activities.

The proposed Scientific Advisory Committee will have a role complementary to that of the present advisory group, examining Federal activities in occupational health in detail and recommending shifts in content and emphasis as dictated by scientific progress and the needs of society. The Committee should be composed of scientists with a broad knowledge of the occupational health field.

16. THE COST OF THE PROGRAM

THE PROGRAM OUTLINED IN THIS REPORT WILL REQUIRE A MINIMUM ANNUAL BUDGET OF \$50 MILLION, WHICH WILL BE DISTRIBUTED ROUGHLY AS SHOWN BELOW. THE FULFILLMENT OF THIS PROGRAM SHOULD PROCEED WITH THE UTMOST EXPEDITION AND AS RAPIDLY AS MANPOWER AND ORDERLY DEVELOPMENT OF PROGRAM ELEMENTS PERMIT. THE BUDGET FOR FISCAL YEAR 1967 SHOULD BE INCREASED TO \$15 MILLION TO MEET THE NATIONAL ADVISORY ENVIRONMENTAL HEALTH COMMITTEE INTERIM RECOMMENDATIONS, WHICH WERE APPROVED BY THE NATIONAL ADVISORY HEALTH COUNCIL IN MARCH 1965, AND TO PERMIT THE DIVISION TO PREPARE FOR THE FULL-SCALE NATIONAL PROGRAM.

INCLUDED IN THE PREPARATION WOULD BE DEVELOPMENT OF LEGISLATION, ORGANIZATIONAL PLANS, AND COST-BENEFIT ANALYSIS FOR THE FEDERAL PROGRAM; DEVELOPMENT OF MODEL STATE LAWS AND STANDARDS FOR STATE OCCUPATIONAL HEALTH PROGRAMS; DEVELOPMENT OF STANDARDS FOR FEDERAL EMPLOYEE HEALTH SERVICES; AND RECRUITMENT OF THE INITIAL CADRE OF PERSONNEL AT THE FEDERAL AND STATE LEVELS.

The Fiscal Year 1967 cost estimate of \$15 million includes \$4 million for categorical and demonstration grants and the balance for intramural activities.

The following budget estimates are intended to show the magnitude of expenditures by major Division of Occupational Health program elements in an expanded national program. Also included are data which compare present Division activities against proposed future operations.

The two tables are arranged so that the current budget of the Division can be compared with recommendations for the National Occupational Health Program as set forth in this report.

Budget Breakdown for National Program

Research Grants		\$10 million
State Support:		
State Program Grants		\$ 8 million
Contracts for Service		\$9.5 million
Fulfilling Federal Responsibilities	\$7 million	
National Monitoring System	\$2.5 million	
Personnel Development (Training Grants)		\$ 2 million
Demonstration Grants		\$ 2 million
In-House Research		\$12.5 million
Technical Services		\$ 6 million
Laboratory Support	\$3.5 million	
Short-term Training	\$.750 million	
Regional Office and State Assignments	\$.750 million	
Federal Employee Health Services	\$.5 million	
Migrant Health Service	\$.5 million	
TOTAL		<u>\$50 million</u>

Comparative Budgets, Division of Occupational Health
(In Thousands)

	1967 Budget	1968 Submitted to BOB	National Program
Research grants	\$2,988	\$ 4,000	\$10,000
State support:			
State program grants			8,000
Contracts for service			9,500
Training grants (Personnel Development)		600	2,000
Survey and Demonstration grants		900	2,000
In-house research	2,778	3,414	12,500
Technical services	826	1,632	6,000
TOTAL	\$6,592	\$10,546	\$50,000

17. COORDINATION OF FEDERAL ACTIVITIES

IT IS RECOMMENDED THAT INTER-DEPARTMENTAL COMMITTEE ON OCCUPATIONAL HEALTH, AND A SIMILAR INTRA-DEPARTMENTAL COMMITTEE WITHIN THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, BE ESTABLISHED TO CONSIDER, AT THEIR RESPECTIVE LEVELS, APPROPRIATE ROLES OF THE VARIOUS GOVERNMENTAL AGENCIES IN OCCUPATIONAL HEALTH. THEY SHOULD ALSO RECOMMEND LEGISLATION AND DEVISE ADMINISTRATIVE ACTIONS EFFECTIVELY TO COORDINATE AND EXPAND FEDERAL EFFORTS IN THIS FIELD.

A number of Federal agencies are currently working in some aspects of occupational health. These include the Armed Services, the Department of Labor, the Department of Interior, and various programs within the Public Health Service. As is the case outside the Federal establishment, what is lacking is a focus of leadership to coordinate, improve, and expand these efforts. Because of this shortcoming and because some of the actions recommended in this report obviously impinge upon present authorities and programs, the establishment of the committees set forth above should receive immediate attention.

URGENT PROBLEMS

Genetics

Virtually nothing is known about the genetic effects of complex chemicals and other materials in the work environment, although certain chemicals and viruses, as well as radiation, are suspected of teratogenic as well as mutagenic action. The very real danger of far-reaching effects of industrial exposures on generations yet unborn deserves intensive study. Criteria for the employment of pregnant women are especially urgently needed.

Enzymology

The science of human enzymes has made great strides in the past few decades and the methods involved have begun to be used in industrial toxicology. This is as it should be, for industrial toxicologists must be in the vanguard of those who search for new research tools. This field of exploration must continue, as it begins to clarify the mechanism of action of some long-known industrial poisons. As these mechanisms unfold, there is simultaneously unfolded a view of physiologic principles which are of value not only to the industrial toxicologist but also to physiologists generally.

There is suggestive evidence that measurements of specific enzymatic reactions ("enzyme profiles") will provide us with information as to which individuals may be more prone to develop undesirable reactions to a specific, noxious agent in industry. This lead should be followed through, for it may explain why such a marked degree of variation exists in individual susceptibility to noxious agents.

Synergistic Action

There is a growing need to expand research into the toxicologic action on the body from exposure to combinations of chemical and physical agents. Except in a few instances, little information is available in this field.

Influence of Physical Environment on Toxic Action of Chemical Agents

It has been shown in recent studies that environmental temperature has a significant influence upon the degree of ill-effect caused by noxious chemicals in experimental animals. The extension of such studies to man, in his natural work environment, needs to be made.

Pneumoconiosis

Lung diseases caused by dust are still with us, suggesting that dust suppression measures based on existing knowledge are just not adequate. Furthermore, our ignorance of some very fundamental aspects of the pneumoconioses is extensive. We do not know, for example, the mechanism of the toxic action of silica or the role that auto-immunity

plays in the pathogenesis of nodular silicotic fibrosis. We do not know with certainty that silicosis will not progress from the early form when the victim is removed from further dust exposure. Coal miners' pneumoconiosis has only recently been recognized as a specific disease entity in this country, when the Division's study of Appalachian bituminous coal miners revealed that one out of ten active miners, and a much larger proportion of inactive miners, had radiographic evidence of the disease.

Our methods of measuring the nature of dust exposures are being seriously questioned today. Careful study is needed of the best methods of collecting and measuring dust samples to assure physiologic significance.

Asbestos

One form of pneumoconiosis, asbestosis, a lung-fibrotic disease due to inhalation of asbestos dust, has assumed new interest. It has been shown that not only is asbestos associated with a decided increase of bronchiogenic carcinoma but exposure to asbestos, even without the development of asbestotic, scarred lungs, is associated with a significant increase of lung cancers, both bronchiogenic carcinoma and pleural mesothelioma. A whole series of questions, of significance to industrial hygiene and to oncology, has been raised by these findings. The Division of Occupational Health has initiated the first phase of a comprehensive study of this problem among asbestos textile workers.

Cotton Dust

The British and others have shown that a chronic respiratory disabling disease, with chronic cough and dyspnea, develops in persons long exposed to cotton dust and other similar cellulose fibers. Adequate intensive studies of this subject have not been made in the United States. The few preliminary observations that have been made here are inconclusive on this point.

Beryllium

When the principal exposure source of the first cases of chronic beryllium poisoning in industry was eliminated, this took care of only part of the problem. Other applications of this useful but noxious metal were developed. Because of its low density and high tensile strength, it found many uses in the space effort and in the field of atomic energy. More recently, we find that beryllium compounds are used as propellants in rocketry, extending the insidious danger from this metal and its compounds from the industrial site to the ambient air.

Trichlorethylene

Trichlorethylene is a highly useful industrial solvent. In the United States we believe that it is noxious only as a narcotic inhaled in relatively high concentrations. Chronic, low level exposures have been considered innocuous here. Studies made in some European countries, however, suggest that it produced chronic toxicity. This subject needs careful resolution.

Exotic Fuels

The development, production and handling of "space age" fuels present potentially serious occupational health problems for thousands of workers. At present, only limited knowledge is available of the health effects of fuels based on hydrozenes, boranes, and rare earth, among others. Toxicity studies and proper control measures are necessary while the fuels are still in the experimental stage.

Agricultural Toxicology

Agricultural activities in our country have become "big industry." It is becoming less and less economic for individuals to be involved in small agricultural holdings. As a result of this change, and the introduction of many new chemicals into agriculture (including pesticides), occupational disease hazards are becoming real in this area of our economy. The subject needs careful epidemiological investigation.

Heavy Metals

Research is needed to delineate the basic mechanisms of their toxicity and develop appropriate techniques for treatment.

Carbon Monoxide

Carbon monoxide is a poisonous gas that has been under study for many decades. We thought we knew all there was to know about it as an acute industrial poison. However, in 1965 it was satisfactorily demonstrated that the Threshold Limit Value (American Conference of Governmental Industrial Hygienists) for carbon monoxide should probably be 50 ppm, and not 100 ppm as it has been. That is to say, exposures above 50 ppm for eight hours are now believed to lead to toxic effects.

Also, there is an even older, unresolved problem in regard to carbon monoxide exposures in industry (and elsewhere). This refers to the question of whether or not there is a clinical syndrome due to chronic exposure to lower levels of the gas, levels that will not cause acute poisoning. This question was raised some ten to twenty years ago by European observers and still remains unanswered.

Personal Exposure Meter

There is need for personal monitoring devices to be worn by workers in a variety of potentially hazardous workplaces, such as are now commonly provided to persons potentially exposed to ionizing radiation. Such units would be especially useful in epidemiological investigations.

Occupational Skin Disease

Two-thirds of all unreported occupational disease is dermatitis. The problem confronting us here is primarily that of assuring that known preventive measures--substitution, enclosure of the process, exhaust ventilation, good housekeeping, protective

clothing, barrier creams, and frequent cleansing of the skin--are widely applied. New industrial and agricultural exposures will, of course, require applied research, but the principal need is continued emphasis on control methods. Improper use of epoxy resins, for example, results in considerable loss of time and temporary disability, and this hazard was the one felt in most need of a Safety Standard by members of the Safety Standards Board of the American Standards Association. Poison oak and poison ivy are also major causes of occupational illness. Two proposals made elsewhere in this report--labelling of chemicals shipped interstate and toxicity testing of chemicals prior to marketing--will, if adopted, greatly simplify control of occupational dermatitis.

Industrial Carcinogenesis

Industrial carcinogenesis is important as a phenomenon associated with occupation and is significant as well to general studies of the genesis of cancer. As a matter of fact, the recognition of the concept of an extrinsic agent as a cause of cancer stems from the occupational disease field. (Chimney-sweep's scrotal cancer). Subsequent work showed a relationship between lung cancer and uranium mining and chromate chemical production, skin cancer and exposure to certain petroleum oil products and coal tar work, and bladder cancers in certain dye intermediary production. There are many substances which occur in industry whose etiological association with cancer occurrence needs careful epidemiologic study.

X [It is of interest to note a recent episode in reference to an industrial carcinogen. When an industrial plant that was producing the dye intermediate, beta naphthylamine, a known bladder carcinogen, was required by a new state law to cease production of that material, management simply moved its manufacture to another state. It would be reasonable to conclude that the management simply changed its geographic locus to escape the local restriction, and in so doing is perhaps exposing a new group of workers. This is another example of the obvious role of the Federal intelligence in occupational disease control.]

Physical Agents

In addition to noise, other physical agents may affect parts or even the entire body of workers. Information is needed to determine the effects upon the body by exposures to vibration, microwaves, ultrasonics, infrared, ultraviolet, lasers, masers, and other electromagnetic phenomena as these are developed.

Noise

[A national program of noise abatement and hearing conservation is urgently needed.]

Sight

New techniques should be developed to prevent eye damage from exposures to lasers and masers, infrared and ultraviolet light; and problems associated with glaucoma, induced hemorrhage, and vibration require study.

Artificial Environments

An increasing number of persons are engaged in activities that require them to spend weeks, months, and perhaps even years in environments which were unknown a few years ago. Examples include nuclear submarines, space capsules, submersibles for oceanographic research (Selab), and "white rooms." New environmental health problems have been created--toxicological, psychological, and physiological. The resources of many agencies, including those of the DOH, are needed to evaluate and monitor these exposures.

Aggravation of Degenerative Diseases

We have no pertinent information on the possible worsening, by some industrial exposures, of such degenerative diseases as arthritis, arteriosclerotic heart disease, chronic kidney disease, and other similar conditions of generally uncertain etiology. Careful epidemiologic studies are needed in these areas.

Occupational Mental Health

Social Security data show that, at the end of 1962, 30 percent of all disability allowances to workers were being made for mental, psychoneurotic, and personality disorders, or other diseases of the neuro-sensory system. These people had to be permanently and totally disabled for six months before adjudications could be made. This enormous loss of human resources is a grave national problem and one which cannot be divorced from the field of occupational health.

There is a growing concern on the part of labor and industrial management, as well as in medicine, psychology, and behavioral sciences, and other professions about the mental health of people who work. This interest extends beyond mental disorders specifically related to work situations to include factors in the work environment which either enhance or impede the mental health status of workers.

A few Federal programs are giving either direct or indirect emphasis to mental health status of workers, viz., the National Institute of Mental Health, Vocational Rehabilitation Administration, Veterans Administration and the President's Commission on Employment of the Handicapped. However, there is no communications mechanism for coordinating or avoiding duplication of these efforts.

In spite of budgetary and personnel limitations, the Division of Occupational Health has supported development of two mental health training programs for occupational health nurses, mobilizing assistance from mental health specialists who have volunteered time and effort. This trickle of activity, however, can do little to solve, or even to illuminate, the problem. To meet its national responsibility in occupational mental health, the Division should have qualified staff and adequate funds to mount a coordinated national program. Actions which are urgently needed include the following:

1. Employment of qualified staff to give leadership in epidemiological definition of the occupational mental health field, needs and goals; to provide advisory and consultant services; and to participate in training.

2. Stimulation and financial support of cross-disciplinary research, training, pilot projects, and demonstration programs in occupational groups and community mental health facilities.
3. Establishment of task forces or committees on an intra-Service and inter-Agency level to define and coordinate goals and priorities.
4. Collection, analysis, and dissemination of information from the broad field of mental health to fit it into the fabric of occupational health.

APPENDIX

APPENDIX A

Statement of Position of Conference of State Sanitary Engineers relative to Occupational Health

The Conference of State Sanitary Engineers recognizes a need for the expansion of the program of occupational health in the Public Health Service in order to more effectively influence the development of and support of State and municipal occupational health programs. The Conference recommends that the Public Health Service seek authority, if necessary, in order to make categorical grants to establish and strengthen occupational health programs in States and municipalities; adequate funds for staffing regional offices with trained personnel; and funds to augment training activities and to permit additional training assignments to States.

- (1) Permit the Public Health Service to make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (2) Permit the Public Health Service to make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (3) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (4) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (5) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (6) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (7) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (8) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.
- (9) Intentionally make categorical grants to States and municipalities to permit the development and expansion of their occupational health programs.

APPENDIX B

Report of the Occupational Health Subcommittee
of the Committee on Environmental Health,
Association of State and Territorial Health Officers
July 17, 1964

(Approved by Association)

The Occupational Health Subcommittee of the Committee on Environmental Health, ASTHO, recommends that:

1. The Association of State and Territorial Health Officers offers its assistance to the Occupational Health Advisory Committee to the Surgeon General, United States Public Health Service, with a view to early attaining of the following objectives:
 - a. Legislation to permit categorical grants in occupational health to
 - (1) Meet the qualitative and quantitative needs of State and local agencies to permit improvement and expansion of their occupational health programs
 - (2) Permit the establishment of occupational health programs in State and local agencies without such services
 - b. Intensification of individual State efforts to assure adequate budget, staff, and other resources in support of their occupational health programs to meet the needs of working people in relation to their employment
 - c. Maintaining continuity of direction and implementation of the Public Health Service Occupational Health Program.
2. The Association of State and Territorial Health Officers develop, or authorize the Occupational Health Subcommittee or other specific group to develop, minimal uniform standards for State occupational health programs to include at least:
 - a. Enabling legislation where necessary
 - b. Basic program planning and administration
 - c. Environmental (work) surveillance
 - d. Employees' health surveillance in relation to their employment
 - e. Laboratory support to the foregoing.
3. The Association of State and Territorial Health Officers actively assist efforts to promote adequate resources and support to the Occupational Health Program in the United States Public Health Service so it can perform its functions on a level commensurate with national needs.

APPENDIX C

Statement of Occupational Health Committee of Group Health Association of America, Inc.

(Endorsed by their Executive Committee
on September 26, 1964)

On August 21, 1964, the Occupational Health Committee of the Group Health Association of America met in Washington, D.C. in the offices of the Division of Occupational Health, U.S. Public Health Service. A part of this time, they met with Dr. Murray Brown, Assistant Chief of the Division, and various members of the staff. The meeting resulted in the following statement:

Occupational health has meaning far beyond occupational diseases and accidents, although these comprise a formidable problem in themselves because of the rapidly changing nature of industry. A man's occupation is a fundamental factor in deciding the state of his health and fixing the length of his life. His occupation in large part determines his income, his living environment, his nutrition, and the medical care he receives.

Of the 70 million members of the civilian labor force, probably more than half have some degree of physiological impairment which could be greatly reduced if adequate knowledge were available.*

Yet, occupational health as a basic part of our public health programs and as a protective service to the 70 million Americans who work for a living, has for long suffered from lack of adequate support, both from government and from management and labor.

For example, only 2,000 of the 3 million workplaces in the United States have medical and health programs established by industry to protect the health of workers. Only 42 of the 53 States and territories have tax-supported occupational health programs to deal with the health problems in these places of work. And many of the 42 are grossly inadequate to do their job.

The prevalence and incidence of occupational diseases in the United States is nowhere near accurately known. Yet we know that it is a larger problem than is generally believed. For example, the State of Pennsylvania alone paid over 16 million dollars in 1963 in workmen's compensation benefits to 7,269 victims of pneumoconiosis. The common belief that "silicosis is declining" is deceptive. Incomplete data indicate a 22 percent incidence of pneumoconiosis among coal miners. Pulmonary diseases including pneumoconiosis, bronchitis, and emphysema currently account for 6 percent of all of the disablements compensated by BOASI.

*Report of Subcommittee on Occupational Health, In Report of Committee on Environmental Health Problems, Public Health Service Publication No. 908, 1962.

These are examples of occupational conditions about which we know relatively much. However, of perhaps greater importance, are the extremely rapid changes taking place in industrial processes. New chemicals, new materials and processes are being introduced into industry at a much faster rate than the meager resources of occupational health can keep up with. There is in the United States today no organized network or resources available for the acquisition of information on current trends, let alone ideas scheduled for development, and thus little or no foreknowledge of situations which may be created by new materials or processes.

There are no agreed standards for the work environment with respect to allergens, substances absorbed through the skin, or carcinogens. The same thing applies to psychological conditions. The current standards for noise, vibration, heat, and cold are unsatisfactory. Those used for toxic substances cover only a limited number of substances, and are too often based on evidence of a rather tenuous character.*

The recognition and conquest of such killing and disabling diseases as lead poisoning, mercury poisoning, tar cancer, phosphorus poisoning, radium poisoning, and silico-tuberculosis, is a classical story. Such cases that still develop are nearly always traceable to failure in the application of knowledge rather than to lack of knowledge.*

Yet, in addition, we are faced with completely new problems for which we do not now have adequate resources to investigate and control. For example, hazardous materials like beryllium are now being used as one of the constituents of rocket fuels. Only in the past few years we have seen a tremendous development of epoxy resins, agents for foaming plastics, or plastic materials for machining. Had those concerned with public health been fully aware beforehand of the effects of these substances and their derivatives, precautionary measures could have been devised and a considerable amount of disability avoided.

Occupational health on the federal and state level has suffered in recent years from a variety of developments. During the late 1930's and the 1940's the development of state and local occupational health programs was stimulated by the federal grants-in-aid, and reached an all-time high in 1947-1950 when funds for occupational health were earmarked. In recent years, however, occupational health has had to struggle for the maintenance of its integrity against the expansion of programs temporarily dramatized as a result of current social phenomena, and which use many of the same techniques and technicians. These are the developments in radiological health, air pollution control, and pesticide control for which categorical or other specific federal funds are available to states. The importance of these programs is recognized, but at the same time, added emphasis should be placed on occupational health in order to keep in balance the various environmental factors.

There continues to be a serious shortage of skilled personnel in this field.

In general, most of the states and localities do little or nothing for the protection of workers against occupational diseases, while the Division of Occupational Health of the Public Health Service suffers from insufficient resources and is hampered by the limitations of regulation and tradition from aggressively going into the areas where its talent could help.

* Report of Subcommittee on Occupational Health. In Report of Committee on Environmental Health Problems, Public Health Service Publication No. 908, 1962.

The occupational health program of the Public Health Service needs support on various levels. Of overriding importance in the near future are the following:

(1) Funds for categorical grants in occupational health to establish and strengthen such programs in the states and municipalities.

(2) Adequate funds for staffing the regional offices of the Public Health Service with trained personnel in occupational health.

(3) Adequate funds to augment training activities and to permit additional training assignments to the states.

(4) Funds and personnel for a more effective "intelligence" system to study and anticipate new health hazards arising out of industry.

(5) Development of a "monitoring" system to enable technical personnel to inspect a cross-sectional fraction of workplaces in specific industries, to provide information concerning current operations and to indicate areas needing more detailed studies at a later date.

(6) Investigations in depth of specific hazards, such as noise, various chemicals, etc.

(7) Continuation and expansion of the program concerning pulmonary diseases in industry, including the spectrum of pneumoconiosis, chronic bronchitis, and emphysema.

(8) Consummation of the long discussed plan to establish an Environmental Health Center which will be devoted to basic and applied research of which the Division of Occupational Health would be a major component.

(9) Implementation of the clauses in the Walsh-Healey Act concerned with industries under federal contract providing health protection to their employees.

(10) Development of a program to exploit the resources available in the group practice and other prepayment medical care programs in the nation for (a) the acquisition of information concerning the effects of occupational environment on health, (b) the dissemination and application of such knowledge, and (c) coordination of in-plant and community and other voluntary out-of-plant health service.

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APPENDIX D

Report of the Advisory Committee to the Surgeon General on Occupational Health

The Advisory Committee to the Surgeon General on Occupational Health held its 15th annual meeting on September 22 and 23, 1964. Following a review of what has taken place in the Division of Occupational Health since the Committee's meeting last November, and a discussion of current and proposed projects, the Committee met in executive session and made the following recommendations:

1. That seven full-time competent representatives in occupational health be assigned to regional offices of the Public Health Service.
2. That a study be made by the Division of the pros and cons in developing regulatory functions for the Public Health Service in occupational health; that it include a review of one or more outstanding State occupational health programs to determine how they succeeded and what stimulated their development; and that the results of the study be reported at the next Committee meeting.
3. That necessary steps be taken to assure an adequate supply of professional and technical personnel trained to occupational health to be available for employment wherever needed.
4. That legislation be sought to permit categorical grants in occupational health to (a) meet the qualitative and quantitative needs of State and local agencies to permit improvement and expansion of their occupational health programs and (b) permit the establishment of occupational health programs in State and local agencies now without such services.
5. That the public relations program of the Public Health Service in occupational health be augmented and accelerated.

APPENDIX E

POSITION STATEMENT

NATIONAL ADVISORY ENVIRONMENTAL HEALTH COMMITTEE WORKING GROUP

ON

PUBLIC HEALTH SERVICE OCCUPATIONAL HEALTH PROGRAM

January 18, 1965

An ad hoc working group of the National Advisory Environmental Health Committee has been established to provide liaison in the immediate future between the NAEHC and the staff of the PHS Division of Occupational Health. The occasion for this stems from the development at this time of a revised charter by the Division. This charter is to be aimed at spelling out, first, the responsibilities and mission of the Division appropriate to the current and anticipated state of technology and health resources in the nation, and from this to define the resources required.

The Division was one of the earliest divisional programs in the PHS. It was established at a time when the state of industrialization in the country and the quality of health care within industry were very different than at present. The Division, in fact, has played a major role bringing the improved health practices to industry which so strongly contrast with the primitive industrial health programs of half a century ago.

Because of these profound changes, it is apparent that a complete restatement of objectives and resources is timely. The Division has the development of such a new charter now under way. They have secured the services of Dr. William Frye, former Dean of the School of Public Health of Vanderbilt University and at present Chancellor of the Medical Center of the University of Louisiana, on a consultant basis. The Working Group has offered its services in suggesting approaches and individuals and groups whose advice may be helpful.

Meanwhile the Working Group has formulated some brief statements on needs and positions which can serve as interim recommendations and a series (incomplete) of issues requiring consideration in the development of the charter. These follow:

- 1) In order to reinforce resources in occupational health in local government units and to avoid erosion of existing facilities, categorical grant authority for the award of funds to State and local agencies for the support of occupational health activities is vitally needed.

- 2) Authority and funds for the support of training grants applicable to specialty training in occupational health should be made specifically available to the Division of Occupational Health.

3) The Division should explore means for encouraging, on a pilot and demonstration basis, the development of medical services for small plants.

4) The Division should provide leadership to industry and other employers in the development of uniform recording and reporting procedures for disease prevalence and mortality in employed groups.

5) The Division should explore means for encouraging studies within industry on chronic exposures to industrial materials and processes. The expectation is that these should be conducted by industry but that the Division of Occupational Health would aid in working out techniques and methods.

6) The Division should find procedures for improving communication with industrial management and labor groups and practicing industrial physicians.

7) The Division should make every effort to expand studies on the toxicology of new industrial materials. It is suggested that although the majority of this work should be supported through the grant mechanism in universities and elsewhere outside the PHS, it is imperative for the Division to have accessible to it a strong intramural laboratory capability and that the present excellent unit should be maintained and strengthened.

8) The field studies of occupational disease on an industry-wide basis, of the type which the Division has made in the past, have constituted contributions of major national significance. These should be vigorously continued.

9) Staff representatives for occupational health should be located in the regional PHS offices.

10) The role of the Division of Occupational Health in the establishment and enforcement of regulations needs thorough examination.

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Eastman Kodak Company
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APPENDIX F

AMERICAN PUBLIC HEALTH ASSOCIATION

Resolution Adopted by Governing Council
October 20, 1965

OCCUPATIONAL HEALTH SERVICES

In 1956 and again in 1957, the American Public Health Association called attention to the need for expanded governmental occupational health services. Since then there has been a steady attrition in occupational health services provided by States. Meanwhile, changing technology and shifts in the social and economic structure of the country have increased and changed the problems in occupational health. The problems of occupationally caused disease have been neglected, and there has been failure to capitalize on the opportunity to promote positive health among the Nation's eighty million employed persons.

The American Public Health Association restates its position regarding occupational health in the context of the social, economic and health concepts of today. It urges the Public Health Service, in cooperation with labor and management, to take leadership in developing a program of occupational health with national goals and missions that will meet today's needs. Such a program should not confine itself to occupationally caused disease, but should include preventive services which will promote positive health among all employed persons. It should give consideration to the consolidation of the now scattered responsibilities and resources of the Federal Government. Federal support should be provided to strengthen State and local occupational health programs. The Federal responsibility should be expanded to establish criteria and standards where these are needed, support research and demonstrations, provide for the training of professional people in the needed disciplines, and assure availability of an expanding range and quantity of technical consultation.

APPENDIX G

[Estimated Loss in Production Resulting from Work-Absence and Restricted Activity Due to Illness and Injury, 1964 and 1965.]

	1964	1965
	<u>Billions of dollars</u>	
Gross national product ^{1 2}	622.6	658.0
Wage and salary disbursements ²	331.6	352.2
<u>Loss in production resulting from work absence:</u>		
<u>Wage and salary only</u>		
Direct loss, based on 2 percent of work force being absent daily (2 percent of wages and salaries) ³	6.6	7.0
Total loss, based on an estimate that work absence results in a 2 1/2 percent decrease in production ⁴	16.5	17.5
<u>Total production loss</u>		
Direct (2 percent of gross national product)	12.5	13.2
Total (2 1/2 x direct loss)	31.3	33.0
<u>Loss in production resulting from restricted activity</u>		
(Based on an estimated decrease of one-third of a day's production for each day of restricted activity, excluding work-absence):		
<u>Wage and salary only</u>		
Direct (based on 7.1 days per person per year) ⁵	2.8	2.9
Total (2 1/2 x direct loss)	7.0	7.3
<u>Total production loss</u>		
Direct (based on 7.1 days per person per year)	5.2	5.5
Total (2 1/2 x direct loss)	13.0	13.8
<u>Total loss in production due to sickness and injury (absence and restricted activity):</u>		
Wages loss (direct and indirect)	23.5	24.8
Total production (direct and indirect).	44.3	46.8

¹ Includes following, in billions:

Personal consumption expenditures--\$399.2, gross private domestic investment--\$87.7, net exports of goods and services--\$7.0, government purchases of goods and services--\$128.6. The 1965 figures are based on seasonally adjusted annual rates for second quarter.

² Survey of Current Business, July 1965.

³ Health, Education, and Welfare Trends, 1964 annual edition, From U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings.

⁴ Absenteeism in Industry: A Study by the Committee on Absenteeism, Prepared by The Health League of Canada, in consultation with the medical services of the Bell Telephone Company of Canada, The Canadian National Railways and The Canadian Pacific Railway, Circa 1960.

⁵ Based on National Health Survey data. Over a 3-year period restricted activity averaged 12.8 days per year, per usually employed person, including 5.7 days of work absence.

Source: Division of Occupational Health, August 26, 1965.

APPENDIX H

National Organizations and Associations with Direct or Related Interest in Occupational Health

Direct Interest

American Association of Industrial Dentists
American Association of Industrial Nurses
American Conference of Governmental Industrial Hygienists
American Industrial Hygiene Association
American Medical Association - Council on Industrial Health
American Nurses Association - Occupational Health Nurses Section
American Public Health Association - Occupational Health Section
Industrial Medical Association
Industrial Hygiene Foundation

Related Interest

American Acoustical Society
American Cancer Society
American Chemical Society
American Heart Association
American Institute for Mining Engineers
American Mining Congress
American Society of Refrigerating and Air Conditioning Engineers
American Society of Safety Engineers
American Standards Association
Air Pollution Control Association
Conference of State Sanitary Engineers
Federation of American Societies for Experimental Biology
Group Health Association of America
Health Physics Society
International Association of Industrial Accident Boards and Commissions
Manufacturing Chemists Association
National League for Nursing
National Safety Council
National Tuberculosis Association
Society of Toxicology
Society of Pharmacology
American College of Surgeons
American Insurance Association
National Association of Mutual Casualty Companies
Association of Casualty and Surety Companies