

Occupational safety and health

A POLICY ANALYSIS

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INTRODUCTION

Of the many criticisms of the federal occupational safety and health program, none has been more salient than the incomprehensibility of the standards. Fifty-seven million workers depend upon the standards to protect their lives in the hours they are on the job, and employers must be able to understand the standards in order to comply with them.

One factor which may go a long way to explain employers' complaints that they do not understand the regulations of the law is the inaccessibility of the standards. If one wants a complete set of the standards, one must not only obtain the government documents, but also purchase from independent standards-setting organizations copies of all the national consensus standards which are only referenced in the government documents. During congressional oversight hearings in the summer of 1972, Republican Senator Carl Curtis of Nebraska estimated that a complete collection of the regulations stacks 17 feet high and costs between \$4,000 and \$6,000.

One of the ways to break through the impasse created by these problems, and so move on to the critical issues of adequate protection, compliance and enforcement, is to understand the policy machinery that generates standards.

While the government has made some effort to clarify the highly technical nature of the standards, it has done little to interpret the policy perspectives that motivate the standards. Such questions as--Where do the standards come from? Who is responsible for their promulgation? What are the procedures for standards development and promulgation? What is known to be wrong with the existing standards? What is the federal government doing to correct problems with the standards?--have never been addressed in a systematic and analytical manner.

The purpose of this handbook is to answer those questions. The policy considerations that determine standards are identified and examined on the legal basis for standards, the administrative and organizational responsibilities, a non-technical analysis of existing standards, discussion of issues and policies and recommendations for change. Chapter VII offers a case study to demonstrate the development of a particular standard. While the book does not attempt to evaluate the technical and scientific aspects of the standards, it does, hopefully, provide the policy insights that make these aspects more easily understood.

Outside of this handbook, most of the information published in the field of occupational safety and health can only be found in professional safety magazines, specialized medical journals, some union and trade associations publications, government documents, scientific and technical reports and a few publications of private reporting services. From time to time, a major newspaper will carry a brief article and occasionally a public interest magazine will publish a piece on the subject.

All in all, however, occupational safety and health is not a very visible issue for the public. The one attempt to make it so is a paperback book by Frank Wallick of the United Auto Workers. Wallick's The American Worker: An Endangered Species is, by his own account, a conscious attempt to popularize the issue. Throughout his book, Wallick is unsparing in his criticisms, roasting his own union as well as others for their weak commitments. Business, government, doctors, scientists, politicians and the National Safety Council also come under Wallick's fire. At times the book sacrifices accuracy for polemics, but Wallick's outrage is amply justified by the bulk of his evidence and it is a much-needed first attempt to take the issue out of the hands of the professionals and bureaucrats and lay it before John Q. Public.

Despite its lack of visibility among the public, the short history of the federal occupational safety and health program has been dramatically stormy. The Occupational Safety and Health Act of 1970 was enacted calmly enough, with a minimum of fanfare. A few labor leaders and congressmen hailed it as a new Magna Carta for working people, and the President signed the bill with customary ceremony. But, within a few months after April 28, 1971, the effective date of the Act, the Washington labor community was crying foul. Led by such stalwarts as John Sheehan of the Steelworkers, Jacob Clayman and Sheldon Samuels of the AFL-CIO's Industrial Union Department, George Taylor of the AFL-CIO, Tony Mazzocchi of the Oil, Chemical and Atomic Workers, Frank Wallick of the Auto Workers and George Perkel of the Textile Workers, labor claimed that the new Occupational Safety and Health Administration (OSHA) of the Department of Labor was not doing what it was supposed to do, and the Administration was not budgeting enough money for the new program. Within short order, labor's "big guns"--George Meany, I.W. Abel, Leonard Woodcock and others--joined the offensive on OSHA.

It wasn't too long into 1971 that federal inspectors began knocking at the doors of American business to enforce this law which few had heard of or cared about. Outraged businessmen retaliated with a flood of letters to their respective congressmen.

Most congressmen had felt secure in voting for the Act (who could be against safety and health?), and they were astonished at the rapid proliferation of political problems. Their labor constituents were, in the words of George Meany, "screaming bloody murder" and their business friends were equally vocal. On the one hand labor was arguing "too slow...not enough" and on the other hand business was insisting "too fast...too much."

Individual congressmen began introducing amendments to the law to "protect" business (one amendment exempting certain small businesses passed the Congress but never became law because President Nixon twice vetoed the Labor-HEW appropriations bill to which it was attached). Labor's congressional allies, most notably Senator Harrison Williams (D-N.J.) and Rep. Dominick Daniels (D-N.J.), both of whom have OSHA oversight responsibilities, fired off letters to the Labor Department charging betrayal.

In spite of the controversy which has been raging the last 20 months, occupational safety and health in general and the Act in particular, still do not have wide public exposure, although many more people are now interested and concerned. The public media has largely ignored the issue and no national political figure has jumped to the role of spokesman (George McGovern made a half-hearted attempt to make it an issue in last year's Presidential campaign).

The Act has as its purpose, "to assure so far as possible every working man and woman in the nation safe and healthful working conditions..." which basically means that every worker who is even remotely involved in interstate commerce and who is not covered by any other federal Act superseding OSHA (e.g., the Coal Mine Safety and Health Act and the Metal and Non-Metal Safety Act) is protected. Even such workers as agricultural and domestics, usually excluded under worker-oriented laws, are covered under this one. Thus the law covers almost everyone working: approximately 57 million people in some 4.1 million workplaces. No other piece of worker legislation is so encompassing. If Congress has its way, and there is little doubt that it will, some of these 57 million workers will eventually be excluded from the Act's protection if they work for a small business employing three or fewer workers. Given the record of performance to date, many claim that the currently required scale of protection is impossible to achieve.

The Act has these means to accomplish its purpose:

1. the development and promulgation of occupational safety and health standards;
2. the federal enforcement of occupational safety and health standards;
3. scientific, medical and technical research;
4. occupational safety and health training and education;
5. the development of a corps of safety and health manpower; and
6. a program through which the states can up-grade their occupational safety and health activities, thereby qualifying for the right to administer and enforce their own respective programs.

In addition to outlining how all of this is to be done, the Act spells out a basic set of workers' rights. It further provides for record-keeping requirements, statistics gathering and dissemination and establishment of advisory and study committees.

To implement, enforce and administer its provisions, the Act created two new bureaucracies, one within the Department of Labor and another within the Department of Health, Education and Welfare. The Labor Department's Occupational Safety and Health Administration (OSHA) is responsible for overall administration and enforcement. HEW's National Institute for Occupational Safety and Health (NIOSH) is responsible for primary research and manpower development; its relationship to OSHA is mainly advisory. In addition, the Act created the semi-judicial Occupational Safety and Health Review Commission which is independent of both the Labor Department and HEW. The Review Commission renders decisions on appeals from aggrieved parties, for the most part employers who feel they have been unjustly cited for an OSHA violation.

In their short history, OSHA, NIOSH and the Review Commission have, within their own areas of responsibility, conducted thousands of inspections, issued thousands of citations, promulgated hundreds of safety standards and one health standard, conducted thousands of hours of research, awarded scores of contracts and grants, collected myriad statistics, rendered hundreds of decisions on appeals and invested thousands of hours in training and education. One result has been "a paper explosion" of rules, regulations, procedures and descriptive material. Millions of dollars have been spent and new careers launched.

Since its creation, OSHA has been reorganized twice and suffered a number of high-level casualties. The first Assistant Secretary of Labor for Occupational Safety and Health, George Guenther, was fired from his post after Mr. Nixon's re-election. Patrick Cestrone, OSHA's first director of standards, suffered a heart attack before the standards could be published and resigned his post. Robert Gidel, OSHA's first director of program operations left and joined Cestrone in a private occupational safety and health consulting business. Eugene Newman, OSHA's original director of compliance, has been moved around a couple of times and is presently responsible for OSHA's federal agency programs. OSHA's first director of public information, Robert Resor, was fired, and six of OSHA's ten original regional administrators are gone.

While NIOSH has lost some of the original staff members, its official hierarchy has remained relatively stable. NIOSH's problem has been the difficulty in getting permission to hire the manpower authorized in the budget. The 1971 Presidential freeze on federal hiring has severely restricted NIOSH and it has only been in the last few months, for example, that NIOSH's Division of Occupational Health Programs became something more than a box on an organizational chart.

So far, neither NIOSH nor OSHA have produced statistics to demonstrate that the federal program has succeeded in reducing work-related deaths, injuries and illnesses. Because of a new reporting system instituted by the government at the time of the Act, it is very difficult to make any "before and after" comparisons. However, the Bureau of Labor statistics issued a set of "preliminary" data covering the period July 1 to December 31, 1971. The BLS survey, based on a 60,000-questionnaire sample, indicated that one of every eight non-agricultural workers suffered a job-related injury or illness in 1971. During the six-month period covered, nearly 4,300 job-related deaths were reported. These figures are exclusive of agriculture which is reported to be one of the most hazardous businesses. The National Safety Council estimates that 14,000 workers die every year due to job-related causes.

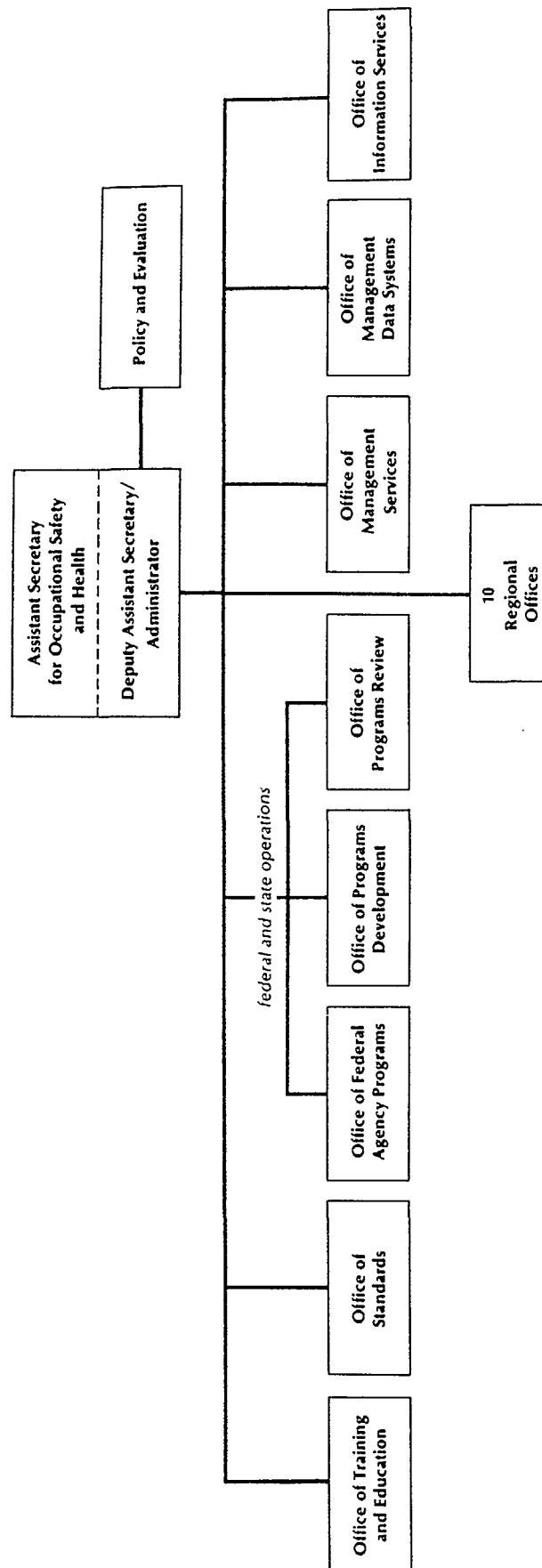
Thus, while some might quibble about the figures, no evidence is available to prove that the workplace is safer today than it was almost two years ago. As a matter of fact, the workplace is probably more dangerous, due to the hundreds of uncontrolled new potentially hazardous substances introduced into the work environment since the Act became effective.

To offer the reader as current a picture as possible of the status of occupational safety and health, a number of special interviews were conducted for this study. Unless otherwise specified in the text, all interviews referred to were conducted by the author. Of additional interest to the reader may be the fact that the "briefing book" which provides the basis for discussion in Chapter III is a special unpublished report prepared by the Occupational Safety and Health Administration for its internal use.

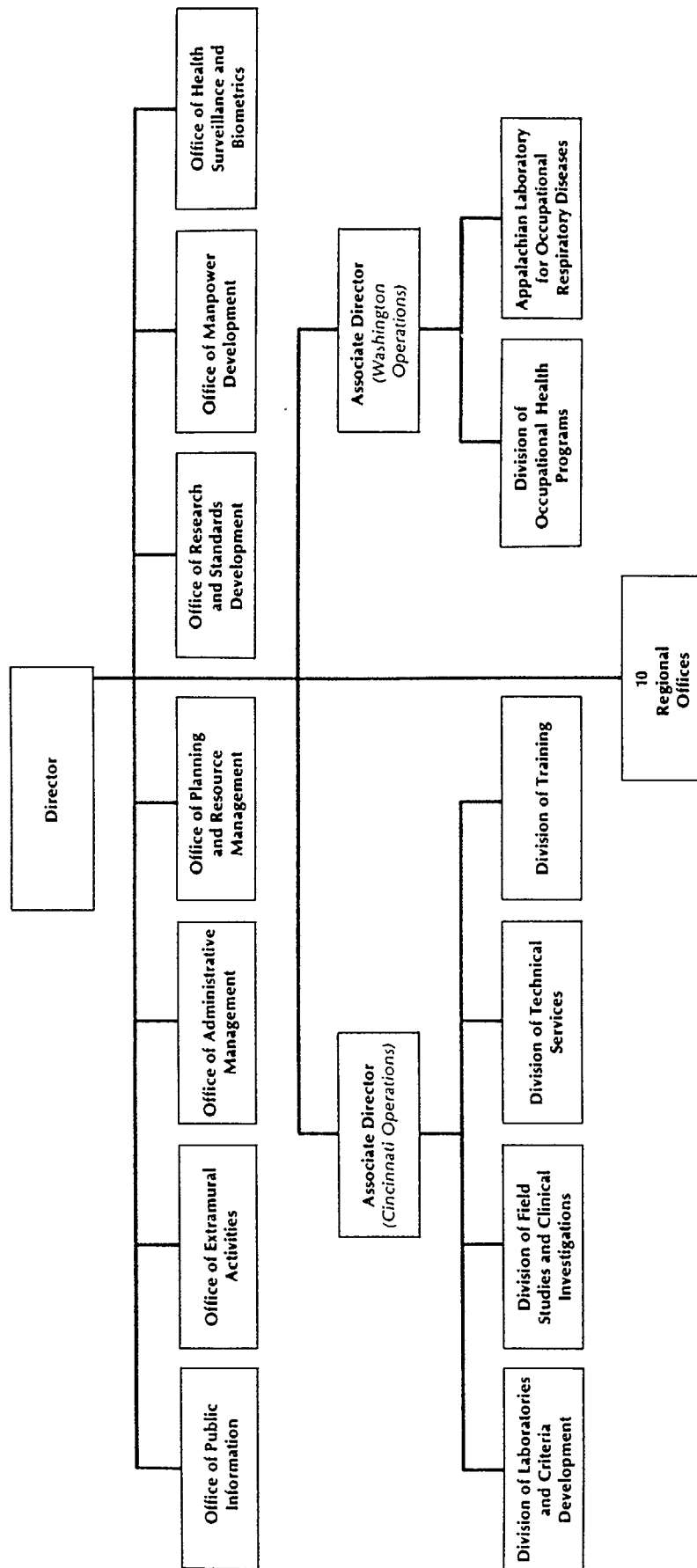
Unlike Wallick's paperback and a recent study by Ralph Nader, this book is not aimed at the general public. It does not approach the subject generally, nor does it accent outrage or indignation. What it does provide is an in-depth, specific analysis of the relationships that are at work between the Act and federal policies and standards and standards-setting.

As a result, it is hoped that this handbook will be useful to a large array of special audiences that share a special concern for the issues or that bear a day-to-day responsibility in the world of occupational safety and health: federal and state governments, unions, business and industry and the medical and legal professions.

Organization of Occupational Safety and Health Administration



National Institute for Occupational Safety and Health



Chapter I

LEGAL AUTHORIZATION OF STANDARDS

Section 6 of the 1970 Occupational Safety and Health Act authorizes three types of standards. It also imposes on employers the so-called "general duty" rule (Section 5,a,1) requiring employers to furnish employment and places of employment "free from recognized hazards that are causing or are likely to cause death or serious physical harm..." (See Appendix F.)

The three types of standards provided in the Act are:

1. national consensus and established federal standards;
2. standards subject to the requirements of section 6(b);
3. emergency standards.

Standards in the first category are usually referred to as "interim standards" while those in the second category are often called "permanent standards." Neither label is altogether correct since all occupational safety and health standards are subject to change and revision. The Act anticipates that new standards will be added, and that existing ones will be continuously reviewed, modified and, where applicable, revoked. In other words, Congress intended safety and health standards to be constantly refined to provide employees the maximum protection possible within the industrial environment and its changing technologies.

The primary differences between the first two categories of standards are their originating sponsors and the methods by which they are developed and promulgated.

National Consensus Standards

Under the Act, the Secretary of Labor has until April 1973 to issue national consensus or established federal standards. In setting these standards, the Secretary is not required to follow the provision of the Administrative Procedures Act which mandates public hearings. Therefore, the Secretary has the authority to promulgate any standard which meets the national consensus or established federal standards criteria.

A national consensus standard is defined as "any occupational safety and health standard or modification thereof which 1) has been adopted and promulgated by a nationally recognized standards-producing organization, 2) was formulated in a manner which afforded an opportunity for diverse views to be considered and 3) has been designated as such by the Secretary of Labor." The Congress specified national consensus standards as those produced by the American National Standards Institute (ANSI) and the National Fire Protection Association (NFPA).

An established federal standard is "any operative occupational safety and health standard established by any agency of the United States and presently in effect, or contained in, any act of Congress in force on the date of enactment of this Act." Established federal standards are those contained in the Walsh-Healey Act, the McNamara-O'Hara Service Contract Act, the Construction Safety Act of 1969, the Longshoremen's and Harbor Worker's Compensation Act, and the National Foundation on Arts and Humanities Act.

According to the Occupational Safety and Health Act, any national consensus standard or any established federal standard can be adopted by the Secretary unless he determines that such a standard would not improve safety or health.

Section 6 (b) Standards

Section 6 (b) standards are those which result from the procedures detailed in Section 6 (b) of the Occupational Safety and Health Act. The legislative history of the law indicates that Congress intended the national consensus and federal standards to be of an interim or temporary nature. It was expected that the consensus and federal standards would be reviewed, modified and, where applicable, revoked in accordance with Section 6 (b). It was also expected that new standards would be added to the initial package through the 6 (b) process.

According to the Act, 6 (b) standards are to be based on research, demonstrations and experiments, taking into consideration the latest scientific information, feasibility and experience. Where applicable, these standards are required to contain provisions for the use of labels or other warning devices, treatment, preventive measures and engineering controls, limits of exposure, the use of personal protective equipment, monitoring and measuring worker exposure and medical examinations. Employers are also required to maintain accurate records of worker exposure to those "potentially" toxic materials or harmful physical agents which must be monitored or measured, and to inform employees if they are being exposed to such hazards. Employers must inform workers about corrective actions being taken where exposure levels exceed the prescribed standard.

These special rules for harmful exposures are applicable to those 6 (b) standards which are usually referred to as occupational health standards (governing such substances and agents as chemicals, gases, fumes, dusts, heat and noise). Compared to safety standards, occupational health standards are considered seriously underdeveloped and in critical need of research.

The process for the development and promulgation of 6 (b) standards is as follows:

1. the Secretary of Labor may propose such standards on his own,
2. he may appoint an advisory committee to develop a 6 (b) standard and make recommendations,
3. the National Institute for Occupational Safety and Health (NIOSH), in the Dept. of Health, Education and Welfare, may make recommendations for new standards based upon its scientific and medical research,

4. interested parties such as employers or employees may request the Secretary to develop, modify or revoke a standard.

The Act provides for public participation in the 6 (b) process through the submission of written comments, public hearings and representation on advisory committees. The decision as to which means of participation are allowed is almost entirely left to the discretion of the Secretary.

In the first place, the Secretary may determine that a new or revised standard is not needed and therefore reject a request to initiate 6 (b) proceedings. If such is the case, he is only required to publish his reasons. Should he decide that a new or revised standard is needed, he may simply promulgate it. In this event the Secretary is required to publish the new standard in the Federal Register and to allow 30 days for the submission of written comments by interested parties.

During this 30-day period interested parties may file objections to the standard and request a public hearing. Within 60 days after the expiration of the period provided for the submission of written comments, or within 60 days after the completion of a public hearing, the Secretary must either issue a new standard or make a determination that one is not needed.

Should the Secretary decide to appoint an advisory committee, the entire process could, under the Act, take as long as 540 days or 18 months.

The specific time requirements are:

1. advisory committee recommendations, maximum 270 days,
2. publication of standard in Federal Register, maximum 60 days,
3. written comments and hearing requests, maximum 30 days,
4. hearings set, maximum 30 days,
5. promulgating standard after hearings, maximum 60 days,
6. delay of the effective date of the standard, maximum 90 days.

Emergency Standards

The Secretary, at any time, can issue an emergency standard if he determines that it is necessary to protect workers from immediate danger. This action can be taken where existing standards are judged inadequate or where there are no existing standards. An emergency standard takes effect immediately upon publication in the Federal Register. From the date of publication, the Secretary has six months to promulgate a 6 (b) standard based on the emergency action.

Other Standards Provisions (summary): In addition to authorizing specific types of standards, the Act also provides for the judicial review of standards,

variances from standards, standards advisory committees and the relationship of states to the development of standards.

Once the Occupational Safety and Health Administration (OSHA) in the U.S. Dept. of Labor promulgates an interim, emergency or permanent standard, the Act provides that any adversely affected party can challenge the validity of the standard by filing a petition with the U.S. Court of Appeals. The petition for the Court's review of the standards must be filed within 60 days from the promulgation of the standard. Unless otherwise ordered by the Court, such a petition "shall not operate as a stay of the standard."

The Assistant Secretary for OSHA can permit variances from a standard if:

- an employer can demonstrate his inability to comply in the time required due to shortages in trained personnel or equipment, or due to inadequate time for construction or alterations;

- an employer can demonstrate that he has, or will have, safety and health protections as effective as a federal standard;

- an employer is participating in an approved occupational safety and health experiment.

The Assistant Secretary may appoint advisory committees to assist him in his standards-setting functions. Each such committee must not consist of more than 15 members representing the Secretary of HEW, equal representation from employers and workers, the states and any other qualified person as the Assistant Secretary may determine. All advisory committees are to be public and the committees have a maximum of 270 days to make recommendations to the Assistant Secretary.

Section 18 of the Act sets forth provisions whereby the states may administer and enforce their own occupational safety and health programs subject to the approval of a state plan by the Assistant Secretary. One of the criteria for approving a state plan is that it provide for "the development and enforcement of safety and health standards" which are, or will be, at least as effective as the federal program. Thus, if OSHA promulgates a new standard, or amends an existing one, a state must either adopt the same standard or set a comparable standard which is "at least as effective" as the federal standard.

Chapter II ADMINISTRATIVE AND ORGANIZATIONAL RESPONSIBILITIES

The Act divides federal occupational safety and health responsibilities between the U.S. Department of Labor and the U.S. Department of Health, Education and Welfare.

The Secretary of Labor, through his Assistant Secretary for Occupational Safety and Health, has almost total administrative authority over the implementation of the Act. His primary responsibilities are enforcement, standards-setting and state programs. He also has the ultimate decisionmaking authority in the development, promulgation, revocation and modification of standards.

The Secretary of HEW, through the National Institute for Occupational Safety and Health (NIOSH), is primarily responsible for conducting research, recommending standards and developing occupational safety and health manpower. HEW's role with regard to standards is limited to making recommendations to OSHA. These recommendations, for the promulgation of standards based upon medical and scientific research, can be accepted or rejected, in whole or in part, by the Secretary of Labor. His only restraint in this respect is that standards promulgated for toxic materials or harmful physical agents must be based on research, demonstrations, experiments or "other information as may be appropriate." His final decision need not be based solely on information provided by NIOSH, since he must also take into consideration the feasibility of the standards and experience gained through the implementation of the Act. This was recently proved by the promulgation of the asbestos standard (see Chapter VII). The Secretary decided that portions of the NIOSH recommendation were not feasible and he therefore set a standard different from that recommended by NIOSH.

Occupational Safety and Health Administration (OSHA)

OSHA's primary functions are development, promulgation and enforcement of occupational safety and health standards, making OSHA the legal administrative unit for implementation and enforcement of the Act. The Assistant Secretary of Labor for Occupational Safety and Health is the chief administrative officer and, for all practical purposes, the chief occupational safety and health decisionmaker. His immediate boss is the Under Secretary of Labor. The Act, of course, places ultimate formal responsibility with the Secretary of Labor.

Organizationally, OSHA is divided into a national office, 10 regional offices and 54 area offices. Policies and programs, for the most part, are developed in the national office and implemented by the regional and area offices.

The national office is organized into seven basic functional areas: Office of the Assistant Secretary, Office of Training and Education, Office of Standards, Office of Federal and State Operations, Office of Management Services, Office of Management Data Systems and Office of Information Services.

Office of Standards: OSHA's Office of Standards, presently directed by Gerard Scannell, has three major functions:

1. development and promulgation of occupational safety and health standards,
2. development of regulations necessary to carry out the requirements and provisions of the Act,
3. development of criteria for assuring compliance with its standards and regulations.

The Office of Standards is organized into five divisions:

1. Division of Project Management,
2. Division of Safety Standards,
3. Division of Health Standards,
4. Division of Special Industry Standards,
5. Division of Technical Information Service.

Manpower and Budget: OSHA's fiscal 1974 budget request totaled \$69.8 million, with an allocation of \$2.95 million for standards.* Its fiscal 1973 request was \$67.5 million with \$2.8 million allocated for standards, and the fiscal 1972 funds totaled \$36.4 million with \$2.2 million for standards.

Since fiscal 1972, OSHA has had authorized 130 positions for its standards-activity staff. In actuality, however, the office of standards has a staff of between 80 and 90 people, about half of whom are professionals. Most of the increases in the standards budget have been earmarked for an increased number of standards advisory committees.

National Institute for Occupational Safety and Health

NIOSH is the research component of the Occupational Safety and Health Act, but it is also responsible for providing research and setting standards under the Coal Mine Safety Act of 1969. Its two major "clients," therefore, are the U.S. Department of Labor and the U.S. Department of Interior. Dr. Marcus Key is the director of NIOSH. For fiscal 1972, NIOSH had a total budget of \$26,466,000 and 745 staff positions. NIOSH's budgetary requests for fiscal 1973 and 1974 were \$24.4 million and \$25.6 million respectively.

NIOSH's responsibilities are divided into four major programs:

* OSHA and NIOSH are operating under their fiscal 1972 budgets because the President has twice vetoed the fiscal 1973 Labor-HEW Appropriations Bill.

1. standards and criteria development;
2. training and manpower development;
3. technical assistance; and
4. program direction.

Of these four programs, standards and criteria development has, by far, the highest priority (69 per cent of the fiscal 1972 budget was allocated to standards and criteria development). Standards and criteria development briefly means that NIOSH is responsible for conducting research on specific hazardous substances and agents, and producing what are known as criteria documents.

The criteria document results from the Institute's research and specifies the biological effects of a particular substance or agent, safe exposure levels, engineering controls, emergency treatments, measuring and monitoring techniques, the use of personal protective equipment, medical examinations, warning labels, and any other precautions necessary to protect exposed workers. The criteria document is a recommendation to the Department of Labor for the promulgation of a standard. (See Chapter VI for a detailed description of the criteria development process.)

Within NIOSH there are four organizational units which have standards and criteria development responsibilities: the Office of Research and Standards Development, the Division of Laboratories and Criteria Development, the Office of Health Surveillance and Biometrics and the Division of Field Studies and Clinical Investigations.

The Office of Research and Standards Development: This office is composed of three branches:

- criteria development branch;
- toxicity and research analysis branch;
- information resources branch.

The responsibilities of the Office of Research and Standards Development include:

1. reviewing existing scientific criteria for safety and health standards and assessing, through priority systems, the need for additional research program areas for criteria development, and
2. coordinating and maintaining an overview of research activities in the operating divisions of NIOSH, with the ultimate aim of finalizing criteria and standards.

In effect, the Office of Research and Standards Development is responsible for the production of criteria documents in their final form prior to review by the Secretary of HEW.

For fiscal 1972, the Office of Research and Standards Development had a budget of \$1,669,000 and 29 staff positions.

Division of Laboratories and Criteria Development: This division is composed of six branches:

toxicology branch;
 physical and chemical analysis branch;
 physiology and ergonomics branch;
 engineering branch;
 behavioral and motivational factors branch; and
 physical agents branch.

The Division of Laboratories and Criteria Development performs the scientific, medical and technical research from which criteria documents are written. Specifically, the division: 1) develops criteria for standards for the control of chemical, biological and physical hazards to the health and safety of the working population, and initiates standard methodology and instrumentation for the detection, evaluation and control of such hazards; 2) evaluates the toxicity, health and safety hazards of industrial substances, processes and other agents, as well as current research requirements and regulations; 3) conducts methodology studies for evaluating the varying capacity of workers to withstand physical and psychological responses; 4) provides for equipment development, analytical service and calibration needs of other operating divisions within the Institute and maintains an analytical and calibrations service for the U.S. Department of Labor; and 5) evaluates and certifies the performance of safety and health equipment.

For fiscal 1972 this division had a budget of \$6,444,000 and 162 staff positions, making it the single largest unit within NIOSH.

Office of Health Surveillance and Biometrics: This office is responsible for all of NIOSH's occupational safety and health statistics gathering and analysis. One of its primary functions, in conjunction with the Department of Labor, is to establish a priority list "for the conduct of research and the development of standards." In addition the Priorities Evaluation Branch has specific responsibility for:

developing and maintaining new data, and identifying and coordinating additional data sources; and
 developing quantitative procedures for the assignment of priority levels.

For fiscal 1972, the Office of Health Surveillance and Biometrics had a budget of \$1,297,000 and 54 staff positions.

Division of Field Studies and Clinical Investigations: This division is composed of three branches: medical investigation; environmental investigation; and biometry.

The Division of Field Studies and Clinical Investigations is responsible for:

1. conducting nationwide studies, surveys and comprehensive analyses to determine the health status of the working population, including the incidence and prevalence of disease and injury;
2. initiating studies to determine chronic and long-term effects of work-related exposures to toxic and hazardous substances.

For fiscal year 1972 this division had a budget of \$2,198,000 and 48 staff positions.

Chapter III

ANALYSIS OF OSHA STANDARDS

On May 29, 1971, OSHA published in the Federal Register 250 pages of occupational safety and health standards. This was the "initial standards package" of national consensus and established federal standards issued under the authority given to the Secretary of Labor in Section 6 (a) of the Occupational Safety and Health Act. The Secretary retains this authority until April 28, 1973, after which time all new standards must undergo the procedures outlined in Section 6 (b) of the Act. Thus, except for the standard on asbestos, all existing OSHA standards are either national consensus or established federal standards.

Since the publication of the "initial standards package," OSHA has issued approximately 100 revisions under its 6 (a) authority. During the latter part of 1972, OSHA re-published its standards package with the changes that had been made.

Four Sets of Standards: In all, there are four different sets of OSHA standards:

1. general industry standards;
2. special industry standards;
3. construction safety standards; and
4. maritime standards.

The general industry standards document constitutes the basic OSHA standards package. It contains not only those standards applicable to industry in general but also those applicable to seven specified special industries, and references to construction and maritime standards. In order to find a complete listing of construction and maritime standards, however, two additional sources must be consulted. This is most simply done by employing the reference system used by the federal government:

General industry standards and special industry standards (along with references only to construction and maritime standards) are both found in 29 CFR Part 1910 (Title 29, Code of Federal Regulations, Part 1910).

Actual construction standards are listed in 29 CFR Part 1926.

Maritime standards are listed in 29 CFR Parts 1915-19.

Thus, if one wanted to find all four sets of standards, he would have to consult three separate Parts.

The situation becomes even more complicated for general industry standards when one recognizes that the many national consensus standards, which form the basis of the general industry standards, are not spelled out but only referenced. In order to find one of these referenced standards in its entirety one must purchase it from the organization that originated the standard.

For example, the OSHA standards governing powered platforms, manlifts and vehicle-mounted work platforms (Sub-part F) merely outline the general requirements applicable and offer two concluding paragraphs to illustrate the situation. The first paragraph (1910.69) states the precise sources of the standards, which in this case belong to the American National Standards Institute: ANSI A120.1-1970, ANSI A92.2-1969 and ANSI A90.1-1969. The following paragraph (1910.70) then states that "Specific standards of the following organizations have been referenced in this subpart. Copies of the standards may be obtained from the issuing organization." The paragraph then gives the name and address of the organization from which the pertinent standards can be obtained: American National Standards Institute, 1420 Broadway, New York, N.Y. 10018.

Thus, if one wanted a complete set of all OSHA standards, he would have to obtain the government documents, plus purchase copies of all the national consensus standards which are referenced in the OSHA documents. During congressional oversight hearings last summer, Senator Carl Curtis (R-Neb.) estimated that the entire stack of regulations governing OSHA standards would reach 17 feet in height and, since they are mostly national consensus standards, would cost from \$4,000 to \$6,000 to purchase.

General Industry Standards

Upon the publication of the "initial standards package" in May 1971, Secretary of Labor James Hodgson stated, "The initial standards package is both comprehensive and comprehensible. It is comprehensive to assure broad coverage and protection. It is comprehensible in that it is presented in organized form to facilitate understanding by industry and government."

Given the experience of the last 20 months, Hodgson's remarks can be kindly characterized as a gross overstatement. Both industry and labor have bitterly complained about the lack of both comprehensiveness and comprehensibility in the standards (see Chapter IV). Even those former OSHA officials who prepared the initial general industry standards have been critical, including Patrick F. Cestrone, the first head of OSHA's office of standards. In addressing the Second Judicial Conference of The Occupational Safety and Health Review Commission December 1, 1972, Cestrone, now an occupational safety and health consultant, characterized the existing standards as "obsolete." He stated that the standards, particularly those on toxic substances, do not meet the criteria spelled out in the Act. He added that some 25 per cent of the citations issued by OSHA are not technically supportable because the general principles outlined in the standards cannot be applied equally to all situations. Cestrone concluded that the present standards are only intended as initial interim standards and that many more changes are necessary.

Safety versus health standards: The overwhelming bulk of all OSHA standards for all industries are concerned with safety as compared to health. These

safety standards can be defined as those designed to protect workers from accidents. They cover such areas as machine guarding, powered platforms, walking and working surfaces, fire protection, material handling and storage, the proper use of certain kinds of equipment, sanitation, means of egress, personal protective equipment, first aid and electrical work.

Health standards, on the other hand, are those designed to protect workers from diseases resulting from the work environment. In this respect, there is only one occupational health standard (on asbestos) since those on other substances and physical agents are merely "Threshold Limit Values" (TLVs). The TLVs do not attempt, nor should they be interpreted, to define relationships between exposure and disease, nor do they provide relative indices of hazard or toxicity. They are simply levels above which exposure is considered hazardous. Currently, there are TLVs for about 450 substances and agents contained in OSHA's general industry standards. This is a very small number compared to the thousands of substances and agents which are estimated to be in industrial use.

General Industry Standards: A Critique

The general industry standards package contains 22 sub-parts, 98 sections, and hundreds of provisions. The sub-parts are listed alphabetically and the general industry standards are included in sub-parts D through Q, plus sub-part S. Sub-part R contains standards for the seven special industries.

The general industry standards were taken primarily from three sources: the Walsh-Healey Act, the American National Standards Institute (ANSI) and the National Fire Protection Association (NFPA). It should be noted that, under Section 6 (a) of the Act, OSHA is limited to setting only national consensus or established federal standards. Thus, if there are no ANSI, NFPA or established federal standards, OSHA cannot use its Section 6 (a) authority.

The following is a sub-part-by-sub-part analysis of the "initial standards package." It is based on a special, unpublished "Briefing Book" prepared by OSHA officials responsible for the initial standards package published in May 1971. Since that time, OSHA has made an estimated 100 changes in the standards and has republished a "clean copy" of the standards incorporating the changes. Many of these changes were editorial and others had to do with the effective dates of some standards. In addition, OSHA has promulgated one new 6 (b) standard, for asbestos, and made some other 6 (a) revisions and modifications. The latter part of this chapter identifies and lists the revisions and modifications which have occurred. Thus, while some improvements have been made in response to the briefing book, many of its criticisms remain valid.

Sub-Part D: Walking and Working Surfaces The standards in this sub-part are designed to: provide minimum housekeeping requirements, and protect workers from trips, slips and falls resulting from unsafe floors, other working and walking surfaces, ladders and scaffolding.

According to OSHA's briefing book, "no really satisfactory available standards were found for establishing safety requirements for powered platform scaf-

folds for temporary use, job-made ladders, vehicle dockboards, decks of floating equipment, or power loading docks..." The briefing book also stated that there were some unresolved problems created by the lack of up-to-date standards, by old standards and by certain advisory language. The book recommended that these problems be resolved through the 6 (b) procedures.

Sub-Part E: Means of Egress The purpose of this sub-part is to provide "general guidance" on necessary features of building construction, arrangement and equipment for safe egress in the event of fire or other emergencies. Means of egress is generally defined as "a continuous and unobstructed way of exit travel from any point in a building or other structure to a public way..."

According to the briefing book, when this sub-part was first drafted by OSHA it included not only "general guidance" requirements but also many detailed provisions from eleven chapters of the NFPA standard 101-1970. However, "considerations of the stringency of the requirements (contained in the first draft), particularly for existing buildings, led to the decision to remove the detailed requirements and base the sub-part upon the general provisions of this standard (NFPA 101-1970)." As a result, the briefing book admitted, "the use of generalities in this sub-part compromises the requirements since the necessary criteria for determining compliance have been omitted." (emphasis added)

The book recommended that OSHA either adopt NFPA 101-1970 under its 6 (a) authority or initiate 6 (b) proceedings "as soon as possible." The recommendation to use 6(a) authority is a bit ludicrous since the first draft of this sub-part recommended such action under 6 (a) and it was rejected.

Sub-Part F: Powered Platforms, Manlifts and Vehicle-Mounted Work Platforms The purpose of this sub-part is to protect employees from falls while working on platforms suspended on the outside of buildings or mounted on vehicles with elevating machinery. It also provides standards for belted manlifts used by trained workers.

According to the briefing book, this sub-part is limited by the fact that there are no requirements for the owner/user of vehicle mounted platforms, and the standard for powered platforms does not cover those platforms which use a hoist machine that climbs suspension ropes.

The briefing book recommended that these limitations be corrected.

Sub-Part G: Occupational Health and Environmental Control This sub-part is perhaps the most important in terms of long-range consequences and is by far the least developed. For all practical purposes, these standards will demand the greatest share of NIOSH's medical, scientific and technical research efforts.

The purpose of these standards is "to provide protection from occupational diseases resulting from exposures to chemical contaminants and physical agents.."

The initial package contained standards on:

1. air contaminants (these are the TLVs, covering about 450 substances, which were originally contained in the Walsh-Healey Act);

2. ventilation;
3. occupational noise exposure;
4. ionizing radiation; and
5. nonionizing radiation.

To these standards has been added the asbestos standard promulgated under Section 6 (b) on June 7, 1972.

In commenting on these standards (except for asbestos), the briefing book stated that there were no:

satisfactory or available coverage of requirements for local exhaust and general ventilation systems;
 available standards covering the control and use of coherent light (lasers) or incoherent light;
 existing standards covering heat stress;
 available standards dealing effectively with infra-noise or ultrasonics;
 standards on the use of carcinogenic materials.

The briefing book did not review the adequacy of the TLVs, since its primary concern was an analysis of existing federal and national consensus standards to be promulgated under 6 (a) authority. In any case, it is highly doubtful that those who produced the book had the scientific or medical capabilities to judge the adequacy of the TLVs.

Sub-Part H: Hazardous Materials The standards in this part are intended to provide regulations for safe practices in handling, storage and use of commonly used, potentially hazardous materials, including gases, liquids and solids. According to the briefing book, these "standards should be rewritten to more nearly become regulations in the use of these materials and not so much an expression of equipment specifications and protection. Performance type standards are necessary."

Sub-Part I: Personal Protective Equipment The regulations of this subpart are intended to insure that necessary personal protective devices are supplied and used to provide proper and adequate protection.

These standards cover head, eye and face protection, respiratory protective devices, foot protection and electrical protective devices.

The briefing book stated that the standards were limited in that they do not cover design specifications for ear protective devices, eye protective devices for lasers, body and eye protective devices for microwaves or safety hats for electrical workers.

Requirements for specialized protective clothing that is heat resistant, chemical resistant and so forth are also lacking.

Sub-Part J: General Environmental Controls The standards in this subpart are designed to protect workers from unsafe and unhealthy conditions arising from the general work environment, as distinct from hazards related directly to the performance of a specific job.

The requirements cover sanitation and temporary labor camps, as well as color codes, signs and tags for marking physical hazards.

There are no standards covering illumination, ventilation, excessive heat, cold or humidity.

The sanitation standard is not applicable to agricultural employments, although the temporary labor camps standard does cover housing facilities for migrant workers. Color coding standards do not cover piping or process equipment to warn of potentially hazardous contents.

The briefing book recommended that the above limitations be corrected through 6 (b) procedures. The book also stated that "A long-term research commitment is essential to specify and quantify the effects of many other environmental factors which are not now apparent."

Sub-Part K: Medical and First Aid The purpose of this part is to ensure that the health of employees will be adequately protected through the provision of medical personnel to oversee plant health and adequate first aid and other emergency facilities.

The requirements of this sub-part are so inadequate that it prompted the authors of the briefing book to comment, "What is included in these regulations, at the moment, is a broad requirement which does not adequately cover the necessary functions of medical supervision." (emphasis added) "More specific requirements for medical supervision and control in industrial operations must be devised."

The book recommended the initiation of 6 (b) procedures to "expand this sub-part to adequately cover pre-placement examination requirements, medical control requirements and medical personnel and facility requirements for industry."

What the briefing book failed to recognize was that this issue is perhaps one of the most explosive in the whole occupational safety and health field. It calls into question the adequacy of industrial medicine in the United States and begs the question, should the federal government set standards for the practice and management of occupational medicine? Such an attempt will surely meet with immediate and vigorous resistance from the medical community in general and the industrial medicine community in particular.

In addition to the political and professional problems involved, there is almost a complete lack of data and consensus on what constitutes an adequate industrial medical program. Other problems include the availability of manpower and financing for any proposed solution.

Sub-Part L: Fire Protection The standards in this sub-part are intended to provide protection from small fires only.

The briefing book stated that the standards were very limited in that no satisfactory requirements were available for requiring fixed fire protection systems for extreme hazardous conditions or processes. Also, the requirements only apply where or when a system is installed; there is no requirement to have fire alarms or alerting systems.

The briefing book recommended a detailed study of what types of processes and conditions require fixed fire protection and alarm systems to protect the safety of employees. This study should include everything from the production of munitions to the making of cardboard boxes.

Sub-Part M: Compressed Gas and Compressed Air Equipment The purpose of this sub-part is to protect workers from the hazards of rupture or explosion of pressure vessels, including cylinders and portable tanks or compressed air receivers.

The standards set requirements for inspection, testing and examination of cylinders and the installation of safety-relief devices on cylinders, tanks and air receivers.

Much of this sub-part is based on previously existing Department of Transportation regulations. The briefing book stated that the limitations of this sub-part result from the fact that Department of Transportation regulations do not apply to every cylinder or cargo tank used for compressed gases and 23 states do not enforce a pressure vessel safety law at this time.

The briefing book recommended that OSHA promulgate new standards for compressors used for air, gas industries, process industries and refrigeration. "Pneumatic tools, machinery, power and control systems and hoses should also be covered by new standards. Older non-Code pressure vessels should be withdrawn from service and others subjected to an annual hydrostatic test by regulations."

Sub-Part N: Materials Handling and Storage The standards in this sub-part are intended to provide protection against accidents in the handling and storage of materials in all industrial processes, including use of mechanical equipment in safe operating order.

According to the briefing book, the requirements of this sub-part "cover only a few of the varied types of situations and mechanical equipment to which employees are exposed when handling materials."

The standards used, "provide requirements for a nominal number of indoor storage situations covered by existing and applicable standards. The coverage of mechanical equipment is limited to industrial trucks, overhead and gantry cranes, derricks, crawler locomotive and truck cranes for which consensus standards are currently available."

The briefing book stated that these limitations resulted from the absence of satisfactory requirements for safety in manual handling and outdoor storage, and use of equipment including conveyors, cableways and related equipment, floating equipment, base mounted drum hoists, mobile hydraulic cranes, slings, portal, power and pillar cranes.

The book concluded that "The lack of current standards covering additional material handling equipment limited coverage of important equipment in this sub-part." (emphasis added) It recommended 6 (b) action to correct these deficiencies.

Sub-Part O: Machinery and Machine Guarding The standards in this sub-part are intended to provide protection for the point of operation and/or power transmission for various types of fixed machines.

These requirements cover only certain machines for which ANSI standards were available.

According to the briefing book, this sub-part is limited by the fact that there were no satisfactory or available specific requirements for metal working machinery such as metal cutting saws, hydraulic power presses or various types of sheet metal machines for cutting, rolling or forming operations. Also the standards do not cover food processing machinery, farm machines or many other machines.

The briefing book recommended that coverage be expanded to include additional machines in other industries. This could be done by applying basic guarding requirements to those machines which are identical or very similar in operation to machinery presently covered (woodworking, rubber and plastics).

Sub-Part P: Hand and Portable Powered Tools and Other Hand-Held Equipment These standards prescribe protection for the point of operation for various types of portable tools and equipment and provide for the safe use of portable tools and equipment.

These requirements cover only specific portable tools, such as portable circular saws, abrasive wheels and explosive actuated fastening tools.

The standards suffer from the absence of satisfactory requirements for nonpowered portable hand tools or for several other types of portable powered tools.

The briefing book recommended an expansion of coverage to include hand tools and other portable powered tools and equipment which can be guarded effectively.

Sub-Part Q: Welding, Cutting and Brazing The standards in this sub-part are designed to protect employees from injury and illness, and the protection of property and equipment from damage by fire and other causes arising from welding, cutting and brazing.

The standards cover installations and operation of resistance welding equipment and of oxygen-fuel gas systems for arc-welding and cutting equipment. There are also requirements for fire prevention and protection of personnel, as well as certain industrial applications.

In terms of limitations, the briefing book authors stated that "Welding technology and science have advanced so rapidly in recent years that no satisfactory or available requirements were found for automatic welding and cutting processes, such as, but not limited to: Atomic-Hydrogen Arc-Welding or Metallic Arc-Welding process, or the use of electronic tracing systems for machine flame cutting." (emphasis added)

According to the book, "The task ahead will be to develop standards to meet the recent improvements in automatic welding and cutting processes under Section 6 (b) procedures."

Sub-Part R: Special Industries The standards in this sub-part are intended to provide protection to employees in those specified seven industries where the inherent hazards are peculiar to those industries: pulp, paper and paperboard mills; textiles; bakery equipment; laundry machinery and operations; sawmills; pulpwood logging; and agricultural operations.

These standards cover situations involving workplaces, storage areas, materials and machinery peculiar to these industries as well as hazardous situations common to any or all industries.

According to the briefing book, many standards used in this sub-part contained recommendations or suggestions that could not be made mandatory and therefore some hazards are not covered by the standards. Some standards used are several years old and have not been updated to match present industry technology. No standards are now available for many special industries where unique hazards exist.

The briefing book recommended that the entire sub-part be reviewed "to bring the standards in line with current technology, modern practices and new machinery. This review shall include creating new Standards for industries for which no Standards now exist, revising present Standards and deleting those parts of Standards no longer applicable under provisions of Section 6 (b)."

Sub-Part S: Electrical The intent of this sub-part is to provide guidelines for installation, maintenance and use of electrical installations and utilization equipment. (emphasis added)

The sub-part is divided into 13 sections which cover: general requirements; overcurrent protection (fuses, and the like); grounding; outlets; junction boxes and the like; flexible cords; transformers; appliances; hazardous locations.

According to the briefing book, coverage is generally limited to building installations and services. Specifically excluded is coverage for transportation (vehicles), underground mines, electric railroads, communications utilities and electric utilities.

Changes in the Standards Since May 1971

Most of the approximately 100 changes and revisions made by OSHA for its general industry standards are minor, as already discussed. However, a few changes actually revised certain standards so as to make them more effective, and some standards were revoked because OSHA found them irrelevant to safety or health. In addition, one standard for asbestos was promulgated under OSHA 6 (b) procedures.

The following are the changes which have occurred between first promulgation of the general industry standards in May 1971 and November 1972:

August 13, 1971: OSHA published a number of miscellaneous amendments to the standards which, for the most part, addressed the need for some clarifications, corrections and changes in the effective dates of certain standards. The most significant changes were the delay of three years for the modification of presently-installed mechanical power presses and the clarification of the sub-part on air contaminants.

September 9, 1971: OSHA published a rule extending the applicability of certain federal standards.

December 7, 1971: OSHA promulgated an emergency standard for asbestos which was the prelude to the final asbestos standard developed through the 6 (b) process.

February 11, 1972: OSHA published a rule on the effective date covering design and construction requirements for new powered industrial trucks, except for those used in earth-moving and over-the-road hauling.

February 16, 1972: OSHA published a series of revisions to the electrical standards which updated them, clarified the applicability of certain provisions and clarified certain definitions used in the standards.

March 31, 1972: OSHA published a series of miscellaneous amendments to the standards which were mainly clarifications of the scope of the standards' requirements.

June 7, 1972: OSHA promulgated a final standard on asbestos.

July 14, 1972: OSHA amended the standards on fire extinguishers to "more adequately reflect the standards of the National Fire Protection Association (NFPA)."

August 22, 1972: OSHA issued a number of clerical corrections to the standards covering electrical welding, cutting and brazing.

September 8, 1972: OSHA issued a number of editorial and clerical corrections to the standards on powered platforms, manlifts and vehicle-mounted work platforms.

September 14, 1972: OSHA issued a revised standard on the allowable capacity of glass and plastic containers for certain flammable liquids.

September 22, 1972: OSHA revoked the sanitation requirement on the height of toilet partitions.

In addition to the above adjustments of the general industry standards, OSHA made a number of revisions in the construction and maritime standards, the four most significant being:

1. revision of certain requirements related to light residential construction;
2. provision for roll-over protective structures for vehicles used in the construction industry;
3. provision for traffic control devices and helmets for electrical workers in construction; and
4. an asbestos standard applicable to ship repairing, shipbuilding, shipbreaking and longshoring.

Proposed Changes

On November 2, 1972, OSHA issued a "status report on proposed changes in Standards." According to the report, the following proposed changes have been published in the Federal Register. Since the time of the report some of these proposals have received final OSHA action and other changes have been added to the proposal list. The proposed changes, as of November 1972, include the following:

Power transmission and distribution lines (May 10, 1972--public hearings conducted June 27-28, 1972);

Resolution of conflicts between general industry and construction standards on catch platforms and scaffold height, and revocation of ban on pumpjack scaffolds (June 7, 1972--public hearing conducted July 26, 1972);

Revocation of requirement for women's retiring rooms (June 7, 1972--public hearing conducted October 3, 1972);

Modification of sanitation standards including requirements on ice in drinking water and on the need for split-toilet seats (July 15, 1972);

Revision of fire protection requirements (July 29, 1972);

Modification of portable electric tool requirements to permit use of double-insulated tools and switch controls (September 14, 1972);

Revocation of prohibition on industrial truck steering knobs and selected materials handling and storage requirements (September 14, 1972).

The report also gave the following estimates on publication of additional proposed rules:

Pesticides--application and field re-entry (2nd quarter, FY 1973);

Revocation of color codes for physical hazards and on size requirements for signs (3rd quarter, FY 1973);

Technical changes in agricultural operations, definitions and scope (3rd quarter, FY 1973);

Compressed gas and compressed gas equipment (3rd quarter, FY 1973);

Woodworking machinery and woodworking machinery guarding (3rd quarter, FY 1973);

Selected carcinogens not including bis (chloromethyl) ether (3rd quarter, FY 1973);

Carbon Monoxide, heat stress, noise and beryllium (4th quarter, FY 1973).

According to the report, final rules on the following issues are expected to be published in the quarters indicated:

Resolution of conflicts between general industry and construction standards on scaffold requirements and revocation of ban on pumpjack scaffolds (2nd quarter, FY 1973);

Power transmission and distribution lines (2nd quarter, FY 1973);

Longshoring on the docks (3rd quarter, FY 1973);
Work in confined spaces (4th quarter, FY 1973);
Local exhaust systems (4th quarter, FY 1973).

In addition, the report stated that dates have not been set for completion of standards-setting action on the following issues for the reasons given:

Explosives (pending resolution of differences between Department of Transportation, Internal Revenue Service and Department of Labor);

Hazardous materials (Standards Advisory Committee to be consulted in determination of necessary standards);

Laundry equipment and machinery (American National Standards Institute (ANSI) standard not available);

Bakery equipment (ANSI standard under further review);

Diving (ANSI standard not available);

Foam and sprinkler systems (National Fire Protection Association (NFPA) standard under further review);

Machinery power transmission guarding (ANSI standard under further review);

Bis (chloromethyl) ether (criteria document will not be available from the National Institute for Occupational Safety and Health until 4th quarter, FY 1973);

Bringing general industry and construction standards into conformity (ongoing operation, several items completed).

Chapter IV ISSUES IN OCCUPATIONAL SAFETY AND HEALTH STANDARDS

Almost from their beginnings, OSHA and NIOSH have been subjected to severe criticism of their approach to standards and standards development. At this point in time, both organizations have evolved policy approaches which can be analyzed. Inherent in these policies are a series of issues which affect the character of occupational safety and health standards.

These issues fall into two broad but distinct categories:

1. those which related to existing standards; and
2. those which related to the development of new standards.

Existing Standards

Issues relating to existing standards are perceived differently by organized labor and by industry. Labor's general view is that the standards, especially occupational health standards, are inadequate and in need of drastic revision. Industry has expressed its dissatisfaction over what it considers to be a "too fast--too much--too soon" federal approach. In addition to these critics, a number of congressmen have joined the debate to voice the concerns of their respective union and business constituencies. Since labor's major concerns have focused on the development of new standards, they will be discussed separately in this chapter.

There are five principal issues which relate to the existing standards, and all of them preoccupy industry and certain congressmen:

1. the complexity of the standards;
2. the relationship of some standards to safety and health;
3. the degree of specificity of some standards;
4. industry-by-industry standards; and
5. the cost of complying with standards.

complexity of the standards: This issue has probably generated more criticism and complaints than any other, and it centers on three primary points:

1. the voluminous nature of the standards;
2. the highly technical language of the standards; and
3. the lack of standards' interpretation.

Senator Curtis was quoted in the preceding chapter on the difficulty and cost of obtaining the regulations governing the standards. Richard Berman, a labor relations attorney for the Chamber of Commerce of the United States, told the same Senate Subcommittee on Labor that it is unreasonable to expect employers

to be familiar with the 250 pages of OSHA standards when they are written in highly technical language by professional safety engineers. Berman also said that "the employer needs help in interpreting the standards." He implied that OSHA, thus far, has refused to supply such interpretations.

Carl Beck, spokesman for the National Small Business Association, testified last summer, before the House Subcommittee on Environmental Problems Affecting Small Business, that small businessmen had difficulty gaining access to and understanding the standards. He complained about their sheer magnitude, the problems inherent in the national consensus reference sources and the lack of government clarification and interpretation of the standards.

In addition to Curtis, Berman and Beck, many other business-oriented spokesmen appeared at the hearings conducted by the Senate Subcommittee on Labor, the House Select Subcommittee on Labor and the House Subcommittee on Environmental Problems Affecting Small Business. Almost all who appeared complained about the complexity, magnitude and volume of the standards.

These complaints led the House Subcommittee on Small Business to conclude in its report that:

the Department of Labor adopted standards too rapidly and "without sufficient forethought as to consequences." In this respect, the report stated that some 35 standards adopted by reference were out of print which, "makes it difficult, if not impossible, for small businesses to comply with the OSHA standards..."

the publication and distribution of information on the standards "is more properly the function of government..." and not the various trade associations as suggested by OSHA officials.

On this particular issue, the subcommittee recommended that the Department of Labor:

1. revise existing standards (including national consensus standards incorporated by reference) to make them clear, concise and comprehensible so that small businessmen can know what the law and standards require of them;

2. develop a more comprehensive and aggressive public information program to inform small businessmen of the content of standards as they relate to their particular businesses; and

3. develop uniform interpretations of standards to ensure consistent application throughout the nation.

relationship of standards to safety and health: This issue has resulted from the fact that certain provisions of the original OSHA standards contained requirements with dubious relationship to safety or health. The two most notable provisions are the prohibition against ice in ice water and the requirement for split toilet seats. These, and other such standards, have been the target of business and congressional criticism. According to the report of the Subcommittee on Small Business, "some standards, such as the prohibition against ice in ice water...are ludicrous, while some important safety factors, such as handling hot tar..., were completely ignored." In his testi-

mony before the House Select Subcommittee on Labor, even former Assistant Secretary for OSHA, George Guenther, admitted that the existing standards contained some provisions which have "only a tenuous relationship to occupational safety and health."

the degree of specificity of certain standards: A number of the standards contain requirements which specify in detail how a particular provision must be followed. Very often, for example, the provision requires that a safety device be made out of a certain type of material and be of a particular size and thickness.

These requirements have also been the target of business criticism. According to Richard Berman of the Chamber of Commerce, "national consensus standards are expressly intended to be guides--not iron-clad limitations." He said that it was a "grave mistake to adopt such standards as inflexible and wooden rules."

In two separate interviews, Deputy Assistant Secretary for OSHA, Chain Robbins, and Gerald Scannell, OSHA's director of standards, acknowledged the problem. According to Robbins, some standards are so specific that they are not only difficult to comply with, but they also retard the development of better standards and more efficient methods of safety and production. Scannell said that specification standards tended to "inhibit the state of the art in standards development."

industry-by-industry standards: The business community and many congressmen have demanded that OSHA "revise and amend all existing standards where appropriate so as to differentiate between risks attendant to different industries and categories within industries." In essence this is a demand for separate standards applicable to distinct industries and businesses and their specialized sub-operations. The rationale for this argument is that the risks involved in light residential construction, for example, are different from those in heavy construction; therefore, the standards should be written to reflect these differences. The same is true, according to these advocates, for industries which differ from each other such as manufacturing and warehousing.

This argument was accepted by the House Subcommittee on Small Business. According to its report, the OSHA standards "fail to distinguish between the variations in risks from one industry to another and within particular industries themselves." Thus, the report recommended that:

1. OSHA revise and amend its standards, where appropriate, so that distinct industries and businesses, and categories therein, would have separate standards;
2. OSHA issue publications containing all relevant standards pertaining to distinct industries and businesses, and categories therein, where they may be appropriately classified as such; and
3. Congress favorably consider amending the law in this respect, should the Department of Labor fail to implement the above recommendations of the subcommittee.

cost of compliance: While all of the issues outlined above are significant, the principal question, for industry at least, is "how much will compliance with the standards cost?" The major concern is not with government fines resulting from violations, but rather those costs incurred in redesign, modification and replacement of equipment and facilities to meet the requirements.

Richard Berman stated that one of the Act's major defects was its failure to specifically provide a "grandfather clause" for non-complying equipment which he claimed could result in the scrapping of equipment long before its useful life is over. "We cannot promote or expect cooperation if this law does not respond to the realities of running a business," Berman said.

No one, of course, knows how much it will cost to comply with the standards, although various spokesmen have made estimates in particular areas. For example, it was estimated that the investment costs to the asbestos industry over a two-year period to meet a proposed asbestos exposure standard was between \$80 million and \$192 million depending upon what level was set. Another example is the estimate that over the next five years, the metal stamp machine industry will spend \$6 billion to comply with OSHA standards. While there are many other such estimates, not much in the way of reliable figures has been produced to substantiate all the claims. Undoubtedly, some of the estimates have been exaggerated. It is fair to state, however, that compliance with the standards will necessitate increased costs, which will be offset, in part, by the resulting benefits of safer and healthier workplaces, e.g., lower workmen's compensation costs and less production time lost.

Development of New Standards

The second major category of issues are those which relate to the development of new standards. While the business community is obviously concerned with new standards, its criticisms have not focused in this direction. The principal reason for this, of course, is that very few new standards have thus far been issued.

On the other hand, organized labor and some public interest groups have targeted their criticisms directly at the inadequacies of the present standards and the need for new ones. Like industry, labor has its congressional spokesmen on this issue, the two most notable being Senator Harrison Williams (D-N.J.), chairman of the Senate Labor and Public Welfare Committee, and Rep. Dominick Daniels (D-N.J.), chairman of the House Select Subcommittee on Labor. Both of these committees have oversight responsibilities for the OSHA Act.

Unlike the issues which surround the existing standards, those which relate to the development of new standards do not lend themselves to policy definition, identification or analysis. These issues have more to do with approaches and emphasis, rather than with concrete actions and reactions. For the most part, they concern the almost unexplored world of industrial health, and they raise many more questions than they purport to answer.

The issues can best be understood through a discussion of:

1. safety versus health standards;
2. labor's criticisms; and
3. NIOSH's view of the problems involved in the development of occupational health standards.

safety as compared to health standards: Most of the standards on the books today are safety standards which have been developed over the years. Many of them are old and in need of refinement. As outlined in the preceding section, many of these safety requirements are specification standards which are rigid, difficult to comply with and retard further refinement. Gerald Scannell stated in an interview that the development of new safety standards should be approached from the perspective of performance rather than specification. In other words, a standard should be written so that it achieves its intended function, the protection of workers.

While new approaches are certainly needed in the field of industrial safety, there is at least a relatively well-defined base upon which to build. Performance standards and greater research into what causes accidents can only add to that which is already known about safety.

Industrial health, on the other hand, is still in its infancy. For years, the National Safety Council has been issuing fairly reliable statistics on occupational injuries and fatalities caused by accidents, and as a result the extent of the safety problem is relatively well known. This is not the case, however, in the field of industrial health. While some estimates have been made, no one really knows the extent of occupation-related disease in this country. We do not know for example how many workers die each year from cancers which result from long-term exposure to certain substances, although a few industrial substances are now known to be carcinogens. We do not even know, for sure, how many hazardous substances are being used in the work environment. According to NIOSH's annual list of toxic substances, there are an estimated 15,000 hazardous substances in use, and NIOSH officials readily admit that this is only a partial list. In addition, it is estimated that hundreds of new substances are annually introduced into the work environment about which little, or nothing, is known with regard to their effects on health.

In addition to the sheer numbers involved, there is the more difficult problem of determining the effects of exposure, especially long-term exposure, to hazardous substances and agents. Compounding the problems even further is the difficulty of determining the effects of these substances when combined with each other or with environmental influences such as heat and light.

Given the enormity of the problem and the paucity of knowledge, the present so-called health standards are indeed inadequate. Presently, all that exists, except for the standard on asbestos, are Threshold Limit Values (TLVs) on about 450 toxic substances and physical agents. It is commonly agreed that these TLVs are not occupational health standards, but merely safety limits above which exposure is thought to be hazardous.

Labor Criticism: Almost since the time the Act became effective, organized labor has been unhappy with its implementation and funding. On a number of occasions, labor has expressed dissatisfaction with government policy governing

compliance and enforcement, state programs, occupational safety and health budgets, and standards.

Jacob Clayman, director of the AFL-CIO's Industrial Union Department, and one of organized labor's leading spokesmen on occupational safety and health, told the House Select Subcommittee on Labor that labor's unhappiness "is no more apparent than in the pace and quality of standards development." Clayman stated that the federal government's most important obligation under the Act is the development of standards. According to the labor leader, the "Labor Department seems to have little energy for standards setting," especially in those areas dealing with occupational health. He criticized the lack of standards work on cancer-causing substances and was particularly critical of the asbestos standard as finally promulgated by OSHA. Clayman was also critical of OSHA's and NIOSH's failure to properly distribute and explain the standards which are on the books.

Leonard Woodcock, president of the United Auto Workers, echoed many of Clayman's concerns before the same congressional committee. Woodcock was especially critical of NIOSH's ability to conduct the research necessary to develop health standards. According to the union president, "We have considerable dissatisfaction with the responsiveness of NIOSH to that section of the law which provides for research studies of safety and health." Among his recommendations to the committee, Woodcock urged an accelerated standards-setting program which included the testing of all new substances introduced into the production process. He also called for the adoption of emergency standards where more comprehensive standards were not immediately possible. Woodcock suggested that the committee request a thorough review of NIOSH's research performance.

George Taylor, executive secretary of the AFL-CIO's Standing Committee on Occupational Safety and Health, testified at the hearings that OSHA had failed to provide and distribute understandable standards guidelines to all covered employments. As a result, he said, "only a minority of these (workplaces) have been provided with copies of these standards in their entire form, let alone their interpretations..."

John Sheehan, legislative director for the United Steelworkers of America, focused his critical remarks on the slowness of new standards development. He told the House Subcommittee that "after two years there has only been one standard promulgated as a result of Section 6 (b) (of the Act)." "In other words," Sheehan told the committee, "all the promulgated standards except the one relating to asbestos were previously existing standards--many of which were very old indeed." Sheehan specifically complained about the lack of standards governing certain sectors of the steel industry. "Two years ago we requested that OSHA institute proceedings to develop new standards for workers exposed to toxic substances at coke ovens in steel mills. The agency has yet to act despite HEW studies showing high rates of lung cancer among these workers." Sheehan urged that the process for the development of occupational health standards be accelerated.

These are only a few expressions of labor's deep dissatisfaction with the occupational health standards. Union leaders from George Meany to local union

presidents have freely aired their complaints. Some unions, like the Oil-Chemical- and Atomic Workers and the United Rubber Workers, have decided to initiate their own occupational health research programs rather than wait for the federal government to act. Both unions have approached this problem through the collective bargaining process.

Joining the unions in their criticism of occupational health standards are public interest groups such as the Nader-related Health Research Group, the American Public Health Association and the American Cancer Society. Private medical professionals like Dr. Irving Selikoff of New York's Mount Sinai Hospital, and congressmen such as Williams and Daniels have added their voices to labor's position. Even the business-oriented House Subcommittee on Environmental Problems Affecting Small Business concluded that "the actual performance of NIOSH to date has been disappointing...during the first year of its existence only one standard (for asbestos) was developed." The subcommittee's report further stated that both employees and employers "are still in the dark as to what constitutes unhealthy working conditions and how these conditions can be abated."

NIOSH's View: It is rare, these days, to find a government bureaucrat who is publicly critical of a program with which he is affiliated. It is even rarer when this official is the head of the program. Yet Marcus Key, director of NIOSH, in a recent speech delivered a frank and harsh appraisal of his program and of the law under which it functions.

Key began his address to the American Public Health Association meeting on November 14, 1972, by stating "We cannot fully achieve the purposes of the Act as it is presently structured..." He said that the Act's emphasis on the development and enforcement of standards is time-consuming and "requires astronomical sums to produce standards for the several hundred thousand chemical substances known or used in this country." "Our approach to criteria development," he explained, "is what our Secretary might call a phony program in that it is only a token attack on the enormity of the problem."

Key added that the Act "takes the simplistic approach" that safety and health hazards can be controlled by developing "rigid standards which can be enforced through an inspection system." With reference to safety standards, the NIOSH official said that they were amenable to control through such a system, "but health hazards are more difficult." Key predicted that any new health standard developed will essentially be based on "educated guesses," even for those substances about which a great deal is already known, such as asbestos.

Key told his audience that as a result of recent experience NIOSH had come to two important conclusions:

1. development of comprehensive criteria documents is expensive and time-consuming. He estimated that the cost per document is approximately \$200,000 to \$300,000 "even when the basic dose-effect relationship is known." The length of time required for each document, Key estimated, was from 12 to 18 months.

2. "We cannot be so specific in the proposed standard as to include every eventuality and contingency," Key said. According to Key there are a

variety of conditions under which one might be exposed to a given substance or agent and it is ridiculous to try to apply the same standard for all situations.

Key said that what is missing from the Act is the "ingredient of professional judgment" which he felt was indispensable to a good occupational health program. The NIOSH director stated that the work environment should be treated as a "sick patient" and good work practices, based upon a combination of known standards and guidelines, should be prescribed.

Key concluded his remarks by calling for:

1. a better utilization of professional judgment;
2. the development of guidelines based upon what is known to be good practice, rather than being "overly concerned with putting everything in iron-clad standards";
3. increased technical assistance and consultation to the small employer; and
4. increased emphasis on developing the manpower to carry out the purposes of the Act.

A Legal View of Standards: In a recent speech (February 1, 1973), Robert D. Moran, chairman of the Occupational Safety and Health Review Commission, stated that some standards are "not worth the paper they're written on and can never stand the test of fairness and due process of law." The Occupational Safety and Health Review Commission is the adjudicatory body established by the Act to hear appeals and render decisions on matters resulting from enforcement of the law. Most of the Commission's work involves appeals from employers who feel they have been unjustly penalized or cited for a violation of a particular OSHA standard.

During his speech, Moran cited a case where the Commission had overturned one of its hearing examiner's decisions which held an employer responsible for the death of an employee electrocuted by his own tool that violated the governing standard. According to Moran, the Commission's decision to overturn the earlier ruling "sounded the opening gun in what could be a long battle between the legal system and the writers of safety and health standards." "That standard might make good sense," he continued, "but it makes very poor law...regrettably there are a lot of others like it."

The Review Commission Chairman said that some standards were not clear or concise, resulting in a "multiplicity of interpretations." "Such a standard," he said, "works to the detriment of the objectives of the Act and has no business being promulgated." Moran further stated that OSHA's policy of alleging noncompliance with a standard, thereby shifting the burden of proof to employers, contravenes basic principles of jurisprudence. According to Moran, "These principles cannot be altered by writers of safety standards..." and the burden of proof on the part of OSHA "cannot be changed by writing into the standards a provision that a certificate of compliance must be retained by the employer."

Chapter V

OSHA PRIORITIES, POLICIES AND PROGRAMS

During their first year of existence both OSHA and NIOSH functioned under what can best be described as "brush-fire" policies and approaches. Both agencies were subject to all of the bureaucratic and political pressures which accompany the creation of new federal bureaucracies. Coupled with the basic inertia of any federal agency, these pressures resulted in policies aimed at meeting day-to-day contingencies. Most of their time was spent in devising stop-gap solutions to problems. Coherent policy formulation and development, therefore, were slow to emerge in all functional areas of the program.

Over the past six months, both organizations have progressed to the point where their policies can be identified, defined and analyzed. These policies, of course, are not immune to change, especially in OSHA's case, since its first boss, George Guenther, is leaving his post to be replaced by someone who has the approval of the new Secretary of Labor, Peter Brennan, a union leader from New York.

As with the other areas of the program, both OSHA and NIOSH have adopted and implemented certain definable priorities, policies and programs with respect to standards and standards development. In some cases the approaches are clear and are being actively pursued. In other instances, approaches are only being explored.

OSHA's policy priorities can be divided into two broad categories. Of immediate concern are those issues which come to bear on the existing standards. The development of new standards, particularly health standards, is OSHA's second major priority.

Both Deputy Assistant Secretary Chain Robbins and Office of Standards Director Gerald Scannell have stated that OSHA's first priority is with those standards which are currently on the books. According to Robbins, "Before we rush into any additional consensus standards or any brand-new standards, we will make the necessary clean-up of the existing standards."

Once this has been accomplished, both said, OSHA will devote a considerable amount of time and resources to the development and promulgation of occupational health standards. This, of course, does not mean that OSHA will wait until all of the work is completed on the existing standards before moving into the area of new standards. Over the past year, as a matter of fact, OSHA has taken some actions toward the development and promulgation of new standards, e.g., the new asbestos standard and the appointment of a few advisory committees for certain substances. These limited actions, however, are only stop-gap measures, and work on the existing standards remains OSHA's number one priority.

OSHA and the Existing Standards: OSHA's approach to the existing standards includes:

1. purging the standards of those provisions which have no relation to safety or health;
2. reviewing the standards to determine the degrees of unreasonable specificity and rigidity;
3. up-dating national consensus standards;
4. providing for future effective dates for some standards;
5. clarifying and interpreting the applicability of standards;
6. compilation of industry-by-industry standards; and
7. making the standards more understandable.

1. purging the standards of those provisions which have "only a tenuous relationship to occupational safety and health": Scannell stated that only those standards which reduced injuries, illness and fatalities will be accepted by OSHA. Others, such as ice in drinking water and split toilet seats, which were originally adopted in the initial standards package, will be excised from the books. OSHA has taken steps in this direction and will continue to review each standard for its actual relationship to safety and health.

2. reviewing the standards to determine the degree of unreasonable specificity and rigidity: OSHA is studying ways to modify those standards which provide for "unreasonable" degrees of specificity and rigidity. In this respect both Scannell and Robbins indicated OSHA's commitment to the development of performance rather than specification standards. Where applicable, existing standards will be modified so that they reflect performance criteria.

3. updating of national consensus standards: As part of its general clean-up effort, OSHA is up-dating those national consensus standards which are obsolete. Most of this work is being done by the national consensus standards organizations from which the standards originated.

4. providing for future effective dates for certain standards: In a number of cases OSHA has postponed the effective dates of certain standards so as to provide industry with an adequate time to come into compliance. The two most notable examples of this are the standards on mechanical power presses and the "2-fibers-per-cc of air" exposure level for asbestos.

5. clarifying the applicability of standards: In an effort to ensure that standards are uniformly interpreted and applied throughout the country OSHA has initiated an ongoing series of "program directives" aimed at achieving this goal. These directives are intended primarily for OSHA's field offices but are also available to the public. For the most part these directives result from inquiries directed to OSHA from employers. Thus far there have been about 10 such bulletins.

6. compilation of industry by industry standards: While OSHA has rejected, in part, the recommendations of the House Subcommittee on Small Business that "distinct industries and businesses, and categories therein, have separate standards," it has undertaken a program to develop guides for 40 or 50 industries. These guides include key standards that a particular industry should follow. In rejecting the committee's recommendation that all standards be categorized by industries and businesses, former Assistant Secretary Guenther stated, "to

attempt to categorize the standards in such a way would be an enormous task requiring a massive commitment of resources and the development of a sizeable bureaucracy." In addition to the guides, OSHA is also undertaking an analysis, on an industry-by-industry basis, of those standards most frequently violated.

7. making the standards more understandable and less complex: OSHA has recently published a new "Guide to Standards" and has developed a looseleaf subscription service designed to provide employers with up-to-date information on OSHA standards.

OSHA and the Development of New Standards: OSHA's approach to the development and promulgation of new standards can be divided into two categories: the development of new safety standards and the development of new health standards.

While the issues involved in the development of new occupational health standards are more complex, controversial and far-reaching, there still remain a number of significant problems in the area of safety standards.

Safety Standards: OSHA's approach to the development of new safety standards includes:

1. identifying where new standards are needed;
2. writing new standards in a more comprehensible form;
3. developing performance rather than specification standards;
4. defining the future roles of national consensus and other standards-producing organizations; and
5. developing adequate special industry (e.g., agricultural) standards.

Identification of New Standards Areas: Most occupational safety professionals and government officials agree that there are many gaps in the existing standards where particular situations are left ungoverned. In such situations, OSHA's only alternative is to invoke the general-duty clause requiring employers to furnish employment or places of employment "free from recognized hazards that are causing or are likely to cause, death or serious physical harm..." Thus, where an OSHA inspector finds a "recognized hazard" where no existing standard is applicable, he must use the general-duty clause. OSHA, for obvious reasons, prefers to use a standard as an inspection criteria rather than the general-duty clause.

OSHA uses the so-called "OSHA-9 forms" to overcome these gaps and to identify areas where additional standards are needed. These forms are a part of an OSHA inspector's kit. When he finds a hazardous situation where no standards are applicable, he fills out the form and sends it to the national office for analysis. Thus far, some 20 issues have been identified for standards development through the use of the OSHA-9s.

Writing New Standards: In an effort to overcome the confusion which has resulted from merely referencing a national consensus standard, OSHA has adopted the policy that all new standards will be written out in their entirety. Thus, new standards will include the complete national consensus standard in the text rather than by reference. This, of course, will eliminate the need for access to the national consensus standards themselves. Scannell is reported to have

said that he does not have the necessary time and resources to do this for all existing standards.

Performance Standards: Given the problem that some standards are written in such a way so as to contain an unreasonable degree of specificity and rigidity, OSHA has adopted the policy of developing performance rather than specification standards. In his response to the House Small Business Subcommittee, George Guenther said that OSHA is "considering the future development of more performance standards as opposed to the present type of specification standards. Performance standards will allow employers more flexibility in meeting the requirements of the standards." This policy concept was reiterated by both Scannell and Robbins in interviews.

Role of Standards Producing Organizations: Under the law, OSHA has until April 1973, to promulgate national consensus standards, after which time all new standards will have to be developed through the 6 (b) process. This, of course, raises the question of the future role of national consensus standards organizations, i.e., ANSI, NFPA and ASTM. Of these three organizations, ANSI has produced the most national consensus safety standards now on the books (for a discussion of ANSI see Appendix A). NFPA, on the other hand, has been limited to the production of fire protection standards. ASTM, whose contribution to date has been minimal, has adopted an occupational health orientation.

For its part, OSHA has adopted the policy that the federal government should not duplicate the expertise and experience of the standards-producing organizations. Scannell, for example, specifically stated in an interview that "our policy is that the federal government should not become a huge standards-writing organization." According to Scannell, the standards requirements demand the expert abilities of organizations like ANSI. He said that, while new standards will have to undergo the 6 (b) process after April, the actual research and development of new safety standards will necessitate a continuing role for the standards-producing organizations.

Special Industry Standards: Contained in the general industry standards is a sub-part covering seven special industries--pulp, paper and paperboard mills; textiles; bakery equipment; laundry machinery and operations; sawmills; pulpwood logging; and agricultural operations. The primary purpose for having special industry standards is to provide protection to workers where the inherent hazards are peculiar to the industries.

The problem is that many hazards are either not covered by the present standards, or they are old and inadequate. In addition, there are other industries which have unique hazard situations where no standards exist at all, e.g., fireworks manufacturing, and oil well service and drilling.

OSHA has so far focused virtually all of its special industry attention on the agricultural sector. Most of this activity has centered around OSHA's Standards Advisory Committee on Agriculture, appointed on June 20, 1972. The purpose of the committee is to assist OSHA in setting new agriculture standards and updating existing ones. For the past six months this committee, and its various subcommittees, have been studying such areas as rollover protection for farm and vehicles equipment, pesticide exposure, temporary labor camps, farm machinery

shielding and noise exposure. OSHA has taken no definitive measures yet to promulgate or modify agriculture standards, although some new standards are anticipated in 1973.

Health Standards: While OSHA officials have periodically issued pronouncements on the high priority given to the development of health standards, its record to date has been poor. After some 20 months in existence, OSHA has promulgated only one health standard, for asbestos.

Advisory Committees: OSHA's approach to health standards has been limited almost exclusively to the appointment of advisory committees for various substances and agents. On May 27, 1972, OSHA announced its intentions to establish, over the next 18 months, advisory committees on carbon monoxide, cotton dust, silica, lead, toxic metals, carcinogens, toxic chemicals, halogenated hydrocarbons, heat stress, noise, fibrous glass, hazardous material labeling and radiation.

Until very recently, except for the advisory committee on asbestos, none of the above committees had been established. In January 1973, OSHA announced that committees on noise and heat stress had been established and were about to begin meetings. Three other committees--carcinogens, beryllium and carbon monoxide--were reported to be near finalization of membership. Over the next 10 months, presumably, OSHA will take action to establish the remaining advisory committees and perhaps form additional new ones.

The slow pace at which the advisory committees have been established can be attributed to two obstacles:

1. the OSHA bureaucratic process itself; and
2. the limited availability of qualified people.

Proposed Standards: On November 2, 1972, OSHA issued a status report on proposed changes in the standards. By the end of fiscal 1973, OSHA anticipates final health standards on selected carcinogens--not including bis(chloromethyl) ether--carbon monoxide, heat stress, noise and beryllium. The report also stated that no time estimates could be given to standards on handling hazardous material until after the advisory committee had been consulted, or to bis(chloromethyl) ether until after NIOSH had developed a criteria document.

It would be wrong to conclude that what OSHA has anticipated will, in fact, be the case. Some of the proposed health standards outlined above may not be set during the time frames given. In addition, some standards might be promulgated on substances not mentioned in the status report, e.g., silica and coal tar pitch. Also, OSHA may issue emergency standards on selected substances, or take other actions based on new NIOSH criteria documents.

What can be concluded, however, is that, at the very best, OSHA's production of new health standards will continue to be modest.

Role of Consensus Standards Organizations: ASTM and, to a lesser extent, ANSI will have some role in the development of new health standards.

Of the 120 ANSI standards incorporated into OSHA's initial standards pack-

age, 20 can be considered health standards in that they set exposure limits on 20 hazardous substances. These so-called "Z-37" standards have been undergoing review and revision by ANSI's Z-37 committee. (See Appendix A on ANSI.)

ASTM, only recently designated a national consensus organization, may have a significant future role in the development of health standards. Almost immediately following its designation as a national consensus organization in October 1972, ASTM announced the formation of a new committee to develop occupational safety and health standards for "Toxic Materials and Harmful Physical Agents." The four areas outlined for investigation are: 1) identification; 2) exposure; 3) treatment; and 4) control.

Although the ASTM committee has OSHA's blessing, there is some question as to its effectiveness, given organized labor's objections and refusal to participate. The unions, who had opposed ASTM's petition to be recognized as a national consensus standards organization, did not attend the initial ASTM committee organization meeting on October 4, 1972, although labor representatives were invited.

In a letter to ASTM declining to participate on the committee, the AFL-CIO stated four objections:

1. ASTM did not have the necessary expertise to develop health standards;
2. the consensus concept did not lend itself to these types of standards where scientific precision, not the political consensus of interest groups, was needed;
3. ASTM was a business-dominated group within which labor had never before been asked to participate;
4. even if it wished to participate, labor did not have enough expert manpower to be adequately represented on all of the various committees and subcommittees; and so could not justify lending its name to standards produced.

According to OSHA's Scannell, the primary role of the new ASTM committee will be to pull together and coordinate health-related research and information produced by other professional groups and organizations.

OSHA and the Costs of Implementing Safety and Health Standards: The greatest concern of American business, and many of its congressional friends, are the economics of complying with the safety and health standards. To date, most of this concern has focused on the costs involved in complying with those safety standards currently on the books. In terms of new health standards, only the asbestos industry has thus far been affected.

As stated in Chapter IV, little accurate or reliable data has been generated on the costs of implementing either the existing or proposed new standards. In the case of asbestos, OSHA, almost as an afterthought, attempted to gain some insight into the costs of the proposed standards through a contract study with Arthur D. Little, Inc. (See Chapter VI for a discussion of the asbestos standard.)

OSHA's policy on the economic impact of standards, particularly new standards, is nebulous. During an interview, Chain Robbins stated that, "We can't willy-nilly promulgate standards without regard to economic factors." On the other hand, he said, "I don't like any approach which trades dollars for lives." Robbins further stated that while better standards would, necessarily, dictate increased costs, they would also result in economic benefits to employers, e.g., lower workmen's compensation costs and less production time lost due to injuries. Thus, Robbins concluded that OSHA's standards-setting job was both to protect workers and to ensure that the standards are economically feasible.

In a speech to the Aerospace Section of the National Safety Council on October 30, 1972, OSHA's standards chief Scannell echoed an approach similar to Robbins'. He said that a program to study the economic impact of standards was justified by the OSH Act which required standards to be feasible. According to Scannell, the effect on wages and profitability could make standards "economically intolerable." Therefore, he said, economic feasibility should, and will, be considered in the development of new standards.

As a first step toward determining the actual cost-benefit ratio of proposed new standards, OSHA has initiated an economic impact study program. Perhaps the most important aspect of this program is the development, through an OSHA contract with Systems Technology Corporation, of economic impact prediction models. The model being developed for safety standards uses mechanical power presses and the model being developed for health standards uses cotton dust exposure. Once these computer models have been developed, subsequent economic studies will focus on noise, heat stress and carbon monoxide.

In his speech to the National Safety Council, Scannell indicated that OSHA's economic impact study priorities were in the areas of new occupational health standards, rather than existing national consensus standards.

Chapter VI NIOSH: PRIORITIES, POLICIES AND PROGRAMS

Unlike the legal, procedural and bureaucratic responsibilities of OSHA, NIOSH's principal role in the development of standards is to conduct the necessary research and to make recommendations based on that research. According to the Act, NIOSH's responsibilities include research on both safety and health standards. However, because of the relatively underdeveloped nature of occupational health standards and the limited resources available to NIOSH, the Institute has largely ignored research into safety standards. In addition to its responsibilities under the OSHA Act, NIOSH must also conduct research and set standards under the Coal Mine Safety Act of 1969. Thus, NIOSH's research-standards responsibilities are threefold: occupational health; occupational safety; and coal mine safety and health.

While NIOSH has not issued a statement of policy priorities as such, the general allocation of funds for fiscal year 1972 provides an accurate gauge.* During fiscal year 1972 OSHA allocated approximately:

- \$5.2 million to coal mine safety and health activities;
- \$4.9 million to all occupational health standards activities; and
- \$350,000 to safety standards activities.

Given the level of NIOSH activity during the first part of fiscal 1973, one can assume that NIOSH has devoted an increased amount of funds to occupational health research and standards. Thus, the figures for both occupational health and coal mine safety and health are today somewhat comparable.

In order to keep this comparison in proper perspective, one must remember that NIOSH's coal mine safety and health budget and activities are for that industry alone, while its occupational health responsibilities include hundreds of other industries affected by thousands of hazardous substances and agents. Thus, while NIOSH's research-standards might appear to be preoccupied with occupational health, the realities of resource allocation demonstrate a higher priority for coal mine safety and health. It must further be remembered that the allocation of NIOSH resources is not altogether discretionary, since the Coal Mine Safety and Health Act dictates that NIOSH perform a number of mandatory functions.

Because coal mine safety and health is beyond the scope of this study, the remainder of this section will focus on NIOSH's research and standards activities for occupational safety and health.

* As of January 1973, no Labor-HEW appropriations bill for fiscal 1973 was in effect because of two presidential vetoes. Thus both OSHA and NIOSH were operating under continuing resolutions at fiscal 1972 budgetary levels.

NIOSH and Safety Standards: Responsibility within NIOSH for safety lies with the Office of the Assistant Director for Safety. The functions of this office include 1) planning, coordination and policy guidance for the Institute's safety program, including research, experimentation, training and technical assistance; 2) coordinating these NIOSH safety activities with OSHA; and 3) planning, directing and coordinating the safety and health management program for the employees of NIOSH.

To date, NIOSH's safety activities have been limited to contracting for criteria documents (primarily in the area of motivational behavior) and safety-oriented studies. The most significant safety study produced, so far, was that by Arthur D. Little, Inc., which was released in October 1972.

The objectives of this study, "The Present Status and Requirements for Occupational Safety Research," were to assist NIOSH in the development of an occupational safety research program by:

1. summarizing the present status of occupational safety research;
2. assessing the need for developing additional research;
3. developing a priority rating system for occupational safety research projects; and
4. preparing a priority list of specific research projects for NIOSH safety research.

The study focused on the development of criteria and standards, and psychological, behavioral, motivational, engineering, equipment and educational research.

In line with its objectives, the results of the study were fourfold:

1. the study concluded that safety research in the nation as a whole was limited and inadequate;
2. the study demonstrated the need for a balanced program of safety research in three principal areas: 1) accident causative factors, accident investigations and statistical studies; 2) general occupational safety research in psychology, motivation, education, training and management safety practices; and 3) physical safety, particularly the development of criteria and standards.
3. the study developed a priority rating system to rank occupational safety research projects; and
4. the study prepared a priority list of specific occupational safety research projects. (See Appendix B for the priority list.)

Upon release of the study, NIOSH's director, Marcus Key, stated that the recommendations contained in the study did not necessarily reflect the Institute's final decision on a priority rating method, the development of criteria for standards or future research objectives. He also said that the report would undergo careful examination by his staff.

NIOSH and Health Standards: Other than coal mine safety and health, NIOSH's principal function has been occupational health research geared toward the development of criteria documents and new standards. As of January 1973, NIOSH produced seven criteria documents on asbestos, beryllium, carbon monoxide, heat stress, lead, noise and ultraviolet radiation.

Criteria Document Development

The criteria document is the primary vehicle by which NIOSH recommends occupational health standards to OSHA. (See Appendix C for an outline of what the documents contain.) The most important section of the document contains NIOSH's recommendations. The recommended standard usually is composed of six parts:

1. recommended environmental and biological standards, expressed in specific numerical environmental exposure levels and biological values;
2. recommended field sampling, analytical or measurement methods;
3. recommended medical procedures, expressed in terms of criteria for disease diagnosis, medical examinations and clinical test methods;
4. recommended safety procedures, where appropriate;
5. recommended protective equipment such as respiratory devices and protective clothing;
6. recommended control procedures, including labeling and warning devices, housekeeping operations, ventilation, enclosure and isolation methods and waste disposal (these are usually referred to as engineering controls).

While the criteria document is only a recommendation and subject to OSHA modification, the final OSHA standards on a particular substance or agent are expressed in the six terms outlined above. Thus the applicable OSHA health standard will be composed of six parts, all of which must be obeyed.

The NIOSH criteria development process takes place in two major stages: the development of research priorities, and the actual preparation of the criteria documents.

Development of Research Priorities: NIOSH has developed and published a "Priority List for Toxic Substances and Physical Agents." (See Appendix D.) The list was prepared utilizing a technique which essentially establishes a rating system based upon a linear relationship of the following variables:

- population index--a relative evaluation of the number of workers exposed;
- relative toxicity index--professional opinion of relative toxicity;
- incidence index--documented incidence of diseases from occupational disease records, physicians' reports and workmen's compensation records;
- quality index--amount of substance used, produced and sold each year;
- trend index--estimate on increased or decreased usage.

The data used as the basis for these indices are drawn from such sources as NIOSH's national occupational hazard survey, its national surveillance network, its industry-wide studies, other health surveys, vital statistics and data gathered from other state and federal agencies, foreign research and the private sector.

The priority list developed from these indices is divided into three general parts. The first part is a list of substances and agents for which criteria documents have been developed. The second section is an "in-progress" list for which criteria documents have been initiated. Finally, there is a listing of some 19 groups of substances and/or agents whose relative priority was established by the priority development system outlined above.

Criteria Document Development Process: The development of research priorities is the first phase of a four-stage criteria document development process. The last three stages include:

1. determining information and research requirements;
2. conducting the actual research (if needed); and
3. compiling the data and preparing the document.

Information and Research Requirements: Once a substance or agent has been selected for criteria development, NIOSH then determines information and research needs. In this respect, the substance or agent is evaluated against the following questions:

1. Is the hazard well defined?
2. Is there sufficient information already available to develop a comprehensive criteria document?
3. Is additional research required?

These questions are largely answered by a "pre-research literature and knowledge survey." The purpose of this exercise is to identify the existing level of knowledge on a given substance. If there is a sufficient body of information on a particular substance or agent, then the research stage can be by-passed and the processing can continue directly into the final stage of preparing the document. If, on the other hand, the survey determines that an insufficient body of knowledge exists, then additional research will be undertaken.

The information and knowledge survey is based on the following:

- existing safety and health surveys and epidemiological studies;
- grant and contract research reports;
- extensive and in-depth literature searches (this is the primary source of the survey); and
- scientific and medical conferences.

In addition to deciding whether additional research is required, this second stage is designed to provide scientific and technical information services. The purpose of these services is to create a national resource for the accumulation and dissemination of occupational safety and health information.

Research: Should the information and knowledge survey conclude that additional research is needed on the substance or agent under review, then NIOSH will initiate such work. This research is targeted toward filling the information gaps identified by the survey. Additional research is usually undertaken by any one of the following (or combinations thereof):

- NIOSH, through its division of laboratories and criteria development, and/or the division of field studies and clinical investigations;
- NIOSH contracts with other laboratories or individual professionals;
- NIOSH agreements with other state or federal agencies;
- NIOSH grants to individuals or institutions.

The research conducted by these groups usually falls into all, or any one of the following categories:

additional literature search;
 clinical and bio-medical research;
 epidemiological research;
 engineering control research;
 measuring and monitoring methods research;
 protective equipment and clothing research.

Criteria Document Preparation: The final, and perhaps most important, stage of the criteria document development process is the preparation of the document itself. It is at this point that all the data and research are evaluated and a decision is made as to what NIOSH will recommend as a standard. It is also at this stage that the politics of criteria development come into play, especially if there is disagreement over the interpretation of the data and research. Conflicts usually center on what numerical levels of exposure and biological values should be set for a given substance or agent. At times there is disagreement within NIOSH itself, or between individual contractors and NIOSH, or among the outside professionals brought in to review a particular document.

The criteria document preparation and decisionmaking process is comprised of 10 stages:

1. contract agreement--NIOSH usually contracts with an outside professional to prepare the document;
2. first draft submitted to NIOSH by the contractor;
3. first draft reviewed by an in-house NIOSH review committee;
4. second draft submitted to NIOSH by the contractor;
5. second draft reviewed by a committee of outside professional consultants (NIOSH attempts to get a mixed committee of professionals from industry, labor and independent groups or individuals. The focus, however, is not on representation but on professional expertise);
6. third draft submitted to NIOSH by the contractor;
7. third draft reviewed by professional societies and federal agencies;
8. final draft submitted to NIOSH by the contractor;
9. final draft reviewed by NIOSH and the HEW hierarchy including the general council;
10. Secretary of HEW transmits the document to the Department of Labor in the form of a recommendation.

Criteria Documents Produced and Scheduled: Dr. Key, in response to a question during the hearings held by the House Small Business Subcommittee, stated that the three chief health hazards most in need of improved standards were in the following disease categories:

pneumoconioses, dust diseases of the lung caused by such dusts as silica, coal, asbestos and cotton dust;
 skin diseases or contact dermatitis, caused by contact exposure to such substances as cement and epoxy resins; and
 exposure to toxic gases.

As of January 1973, NIOSH had produced seven criteria documents on asbestos, beryllium, carbon monoxide, heat stress, lead, noise and ultraviolet radiation. Of the seven, only the asbestos document had received definitive OSHA action in the form of a new standard.

NIOSH, at the present time, has a number of criteria documents which are in various stages of production, and some are nearing completion. These include benzene, cadmium and compounds, chromic acid mist, cotton dust, fibrous glass, mercury, silica, coal tar pitch volatiles and others (see Appendix D).

In addition to work currently under way, NIOSH has announced (October 1972) that it will award four contracts to develop criteria documents on 24 individual substances. The 24 substances are divided into four groups, each containing six substances. NIOSH's proposed schedule calls for the development of one document every four months beginning July 30, 1973, and ending June 30, 1975.

Problems with the Criteria Document Development Process: As outlined in Chapter IV, the three major problems with the criteria document development process are time, costs and specificity requirements. To recap briefly:

1. the costs of developing a comprehensive criteria document are approximately \$200,000 to \$300,000, even when the basic dose-effect relationships are known;
2. the length of time required for each document is 12 to 18 months;
3. it is almost impossible to be so specific so as to include every eventuality, contingency or situation.

Alternatives to Comprehensive Criteria Documents: Given the thousands of potentially hazardous substances and agents, and the requirements inherent in the criteria document development process, a number of alternatives to the process have been proposed. Suggestions ranging from the development of performance standards on whole categories of substances and agents, to greater reliance on subjective professional judgment, have been proposed by spokesmen for government, labor, industry and the private medical and scientific research community.

It appears that OSHA-NIOSH have initiated three policy approaches designed to supplement the criteria document development process:

1. expanded health standards roles for such organizations as ANSI, ASTM and other professional groups;
2. the development of good-practices manuals designed for use as guides to hazards for which criteria documents have not been developed (NIOSH is presently considering manuals on lead battery manufacturing, industrial metal cleaning with organic and inorganic solvents, pesticide formulation, printing operations, ferrous and non-ferrous foundries and soldering and brazing. A manual for metal welding and cutting is now nearing completion, and a contract for a manual on industrial electroplating will soon be awarded);
3. expanding the sphere of research contractors to include labor and industry, with emphasis on joint government-labor-industry funding. This approach is expected to be initiated soon and will include government safeguards so that the product is not biased toward either labor or industry.

Chapter VII

THE ASBESTOS STANDARD AS A CASE STUDY

This study has so far examined the world of occupational safety and health standards from a general perspective. To offer a specific demonstration of the many issues, procedures and problems inherent in setting health standards, this chapter analyzes the development of a health standard for a single substance--asbestos.

Asbestos and its Health Hazards

Asbestos is a mineral fiber which in its natural state is almost as hard as the rock that encases it. Asbestos is best known for its unique fire-resistant, insulating and bonding characteristics. It is used to produce thermal-resistant fabrics, cement pressure pipes, roofing, siding, flooring, space vehicle heat shields, brake linings, gaskets and all types of insulation. Products containing asbestos are used to insulate and fireproof factories, buildings, homes and all types of transportation vehicles and equipment. Everyone associated with asbestos, even its critics, agree that it is both a social and economic necessity, and no responsible person has ever advocated banning entirely the use of asbestos.

In 1971, the United States consumed approximately 750,000 tons of asbestos. Manufacturers of asbestos-containing products had gross sales of approximately \$1 billion in 1971. These companies employed almost 50,000 workers and the Department of Labor has estimated that more than 200,000 workers are exposed to asbestos in a variety of work situations.

Serious research into the health hazards of asbestos exposure began 10 to 14 years ago. Today, there is nearly total agreement that long-term exposure to asbestos can produce:

asbestosis, a scarring of the lungs which progressively worsens;
lung cancer, usually occurring in those who already have asbestosis; or
mesothelioma, a tumor of the stomach walls and lungs which is extremely rare in the general public.

Recent studies have demonstrated a high degree of correlation between cigarette smoking and the incidence of asbestos-related lung cancer.

Asbestos Standard--Chronology of Events The OSHA asbestos standard is unique for two reasons:

1. it is the first occupational health standard to be promulgated and

2. it has run the full gamut of proceedings, from a request for an emergency standard to a challenge in the U.S. Court of Appeals.

The following is a brief description of all of the events which transpired:

Request for an emergency standard: On November 4, 1971, the Industrial Union Department of the AFL-CIO sent a written request to the Secretary of Labor asking that he set an emergency standard for asbestos based on an exposure level of 2 fibers per cc of air. The request was submitted in accordance with Section 6 (c) (1) of the Act.

Emergency standard set: On December 7, 1971, the Secretary published "Emergency Standard for Exposure to Asbestos Dust" in the Federal Register. This emergency standard reduced the existing asbestos-exposure level from 12 fibers per cc of air to 5 fibers per cc. By issuing this emergency standard, which was more lenient than that requested, the Secretary locked himself into a time frame of six months for the promulgation of a permanent standard in accordance with Section 6 (c) (3) of the Act.

Notice of proposed rulemaking: On January 12, 1972, a notice of proposed rulemaking regarding a permanent standard was published in the Federal Register. The notice invited interested persons to submit both oral and written data, views and arguments concerning the proposed standard.

Appointment of advisory committee: On January 24, 1972, pursuant to Section 7 (b) of the Act, an advisory committee on asbestos dust was appointed by the Secretary and requested to make written recommendations on the proposed standard. The advisory committee was composed of representatives from labor, industry and the public.

Transmission of criteria document: On February 1, 1972, the Secretary of the Department of Health, Education and Welfare transmitted to the Secretary of Labor a criteria document containing recommendations for an asbestos standard. The document, prepared by NIOSH, recommended a standard based on an exposure level of 2 fibers per cc of air to be effective two years after the promulgation of the standards. NIOSH recommended that until that time a 5-fibers standard be in effect. The document also recommended stringent medical, labeling and monitoring requirements. One member of the NIOSH professional consultant review committee objected to some of the recommendations of the criteria document.

Written recommendations of advisory committee: On February 25, 1972, the advisory committee submitted its written recommendations to the Assistant Secretary of Labor for OSHA. These recommendations were essentially the same as those made by NIOSH. The industry representative on the advisory committee dissented from the majority and took exception with the committee's refusal to hear testimony from other than NIOSH representatives.

Public hearing: Between March 14 and 17, 1972, OSHA held public hearings to receive oral data, views and arguments on the proposed standard. Representatives from labor, industry, the private scientific and medical community and public interest groups testified.

Certification of the record: On March 31, 1972, the hearing examiner certified the record of the hearings to the Assistant Secretary of Labor for OSHA.

OSHA standard issued: On June 7, 1972, OSHA promulgated a permanent standard for asbestos. It differed substantially from the recommendations of NIOSH and the advisory committee. The OSHA standard established an exposure level of 5 fibers per cc of air to be effective immediately and 2 fibers per cc of air to become effective in four years. In addition to extending the effective date for 2 fibers, the OSHA standard also relaxed many other recommendations originally proposed by NIOSH.

Prior to the promulgation of the standard, OSHA contracted with Arthur D. Little, Inc., to conduct a study on the economic impact of the proposed asbestos standard. OSHA rejected the conclusions of this study as inadequate, although OSHA's final action conformed closely to what the study had concluded.

Court Challenge: On July 27, 1972, the Industrial Union Department of the AFL-CIO and the entire AFL-CIO as a separate party filed a petition with the U.S. Court of Appeals for the District of Columbia for a review of "the entire standard for exposure to asbestos dust." This was done in accordance with Section 6 (f) of the Act.

The labor union challenge of the OSHA standard was joined by two public interest groups: the Environmental Defense Fund, which received the Court's permission to become interveners in the suit, and the Nader-related Health Research Group which filed an amicus curiae (friend of the Court) brief in support of the union position.

The Department of Justice, on behalf of the Department of Labor, filed a respondent brief with the Court. The Asbestos Information Association, representing the industry, filed an amicus curiae with the Court in support of the OSHA standard.

Asbestos Standard--Issues The primary issues of the asbestos standard are:

1. the discretion of the Secretary in promulgating 6 (b) occupational health standards;
2. the reliability of scientific and medical data; and
3. the availability and reliability of technical and economic feasibility data.

A careful examination of the pertinent sections of the law leaves one with the distinct impression that the Secretary has a great deal of discretion in promulgating 6 (b) safety and health standards. While he must follow certain specified procedures, there is nothing in the Act which dictates what standard should be set. According to Section 6 (b) (5) of the Act, the Secretary shall:

"set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity...Development of standards under this subsection shall be based upon research, demonstrations, experience and other such information as may be appropriate. In addition to the highest attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards, and experience..."

Thus, the Secretary must judge what is the best and latest scientific data available and what is a feasible standard.

As mentioned before, there was a great deal of conflicting professional argument surrounding the asbestos issue. The scientific and medical spokesman for labor and industry interpreted the available health data differently. Even NIOSH, in its criteria document, admitted that "the scant data and the long latent period for the development of bronchogenic cancer and mesothelioma do not permit the establishment of dose-response relationship at this time." Thus, the criteria document was "designed primarily to prevent asbestosis." The scientific and medical argument, therefore, centered on what level of exposure would protect an employee against asbestosis. The positions of the experts ranged from advocacy of zero exposure levels to 5 fibers per cc of air.

Reliable data on technical feasibility were even scarcer. Some industry spokesmen indicated that particular types of operations were not amenable to certain levels of dust control. They admitted that a 2-fibers standard could be met in some circumstances, but that in other circumstances it would be impossible, given the present state of technological controls.

The only data on economic feasibility came from the study produced by Arthur D. Little, Inc., under contract with OSHA and that was done on short notice. According to ADL's report, "a 2-fiber standard, if uniformly enforced, would require capital investment on the part of industry that is at least twice that required to meet the 5-fiber standard." In dollar figures, according to the report, capital investment required over a two-year period to meet the 2-fiber standard is approximately \$192 million, compared to \$80 million to meet the 5-fiber standard.

In the end, the Secretary of Labor, through his Assistant Secretary, compromised by extending the effective date of the 2-fiber level to four years rather than the two years recommended by NIOSH. He also loosened NIOSH recommendations on such things as labeling, medical examinations and monitoring requirements.

The Court, of course, will be the final arbitrator of this issue.

Chapter VIII

CONCLUSION

As stated in the introduction of this study, occupational safety and health standards form the foundations upon which the federal program is based. They are, in effect, the laws which demand compliance from employers, and they are the protections under which employees must work. Without standards there would be no basis for enforcement and corrective actions. Without standards, employees and employers alike would be ignorant of what constitutes dangerous and unhealthy work environments.

The relative effectiveness of standards, therefore, determines the effectiveness of the program. If they are weak and inadequate, then the program is weak and inadequate. If better standards are slow in coming, then the overall program will be paced accordingly. While the general-duty clause can be invoked where no standards exist, the sole responsibility for deciding its use lies with the government inspector who may or may not recognize a hazardous situation. Given the current safety orientation of federal inspectors, it is very unlikely that they are capable of recognizing a health hazard when no matching standard is on the books. (Some have charged that the inspectors are not even fully capable of identifying a hazard when a standard for it does exist.)

Two broad conclusions can be drawn:

1. The existing standards do not adequately protect the workers; nor do they meet the needs of employers who must be able to understand, interpret and comply with them. Despite the improvements which have been made in the standards since May 1971, Secretary of Labor Hodgson's evaluation of the standards as both comprehensive and comprehensible is simply incorrect. They cannot be viewed as comprehensive when so many glaring gaps and inconsistencies still remain. This is true for both the so-called health and safety standards. In addition to weaknesses in the existing standards, there are many hazardous situations for which no standards exist at all.

The standards cannot be considered comprehensible while employers claim they cannot understand them. Chain Robbins was probably correct when he said some months ago that the standards will never be readily understood by anyone other than safety engineers or industrial hygienists. If this proves to be the case, then it is incumbent upon the Department of Labor to convince the nation's businessmen, who must hire engineers and industrial hygienists, that safety and health is good business.

2. The government's contribution to the development of new safety and health standards has been marginal at best. After 20 months, one new health standard has been promulgated. It can be argued that some of the 100

or so changes which have been made in the existing standards are in fact new standards and, technically, this is the case. However, the overwhelming bulk of the work has gone into minor changes: editorial revisions, revocations, clarifications, modifications of effective dates and so forth. These efforts can all be lumped under what OSHA calls its general "clean-up" of the standards.

Most of the gaps identified in the OSHA briefing book of April 1971 remain.

Specific Conclusions: The two foregoing conclusions provide an umbrella for a number of specific conclusions to be drawn from this study.

First, many of the problems with occupational safety and health standards have resulted from the Act itself. Dr. Key was partially correct in stating that "The Act takes the simplistic approach that all occupational safety and health hazards can be controlled by developing rigid standards which can be enforced through an inspection system." It has been argued by spokesmen on both sides of the asbestos standard issue, for example, that a single numerical standard is neither applicable to all situations nor enforceable in a variety of circumstances. In addition to its rigid approach to standards, the Act is also primarily responsible for the cumbersome and time-consuming procedures in the development of new standards, although OSHA and NIOSH policy approaches to standards development have exacerbated the problem.

Second, the field of new standards development, particularly new health standards, looms as an almost totally unexplored world. Given the present commitment of resources and manpower, it is very doubtful that significant progress will be made toward a comprehensive industrial health program in the near future. Again, Marcus Key was correct when he characterized the present approach as "a phoney program."

A significant factor contributing to NIOSH's problem is money. By all accounts, except for the Office of Management and Budget (OMB) which must pass judgment on all budgets, NIOSH is grossly under-funded for the mission given it by the OSH and Coal Mine Safety Acts. Since it first came into being, NIOSH has been operating under an annual budget of about \$27 million. For most of this time it has also been under a hiring freeze which has severely restricted its manpower capability. According to the fiscal 1974 budget, NIOSH is scheduled to receive a mere \$25.6 million. Some observers have estimated that this reduction will eliminate nearly 100 NIOSH positions, primarily in the area of training programs. Dr. Key, on the other hand, has stated that to double NIOSH's present output of 20 to 30 criteria documents per year would require 70 to 75 more staff personnel and an additional \$10 million to \$11 million. These estimates, he said, are exclusive of any additional research effort. (It should be noted here that Dr. Key has repeatedly claimed that NIOSH can produce 20 to 30 criteria documents per year. However, after almost two years the Institute has only produced a total of seven such documents.)

Third, given the restraints of the Act and budgets, both OSHA and NIOSH have been guilty of questionable policies on standards.

OSHA's greatest error, perhaps, was its decision to issue all of the standards at once. The Act gave OSHA two years to produce a package of national consensus and established federal standards. Former Assistant Secretary Guenther

took almost every public opportunity to proudly announce that OSHA produced such a package in about a month from the effective date of the Act. While OSHA's initial enthusiasm and effort may be commendable, most of the problems OSHA has been struggling with since that time stem from the initial standards package. In its zeal to produce a "comprehensive" package, OSHA included many standards which were out of date, merely referenced many national consensus standards, included standards that had nothing to do with safety or health, failed to include many hazards, and committed errors in interpretation and writing. As a result, OSHA is now in the uncomfortable position of stating that its "number one standards priority" is "cleaning-up" the original standards package. In this respect, OSHA is rapidly approaching the deadline on use of the simplified Section 6 (a) procedures to make adjustments to the standards.

Had OSHA taken more time to carefully review and screen each standard, issuing only those which were good and well-founded, it would not now need a "clean-up" campaign. In the interim, OSHA could have issued the remaining questionable safety standards as guidelines to its inspectors for enforcement under the general-duty clause. OSHA does not have that many inspectors to begin with, and since they spend most of their time investigating fatalities and catastrophies first, and complaints second, the enforcement sphere is limited from the outset.

Some OSHA officials might take exception to the foregoing, stating that without a comprehensive package, employers would have no basis for voluntarily complying with the standards to make their workplaces safer. The facts are, however, that less than 20 per cent of the establishments inspected have been found to be in compliance, and this is probably due more to pre-existing conditions than to any management actions taken in response to OSHA. Also, judging from the outcry made by the business community, employers cannot understand many of the standards, and it is therefore foolish to expect someone to voluntarily comply with something he claims is incomprehensible.

A second major policy defect appears to be OSHA's insistence on advisory committees in the development of new standards, especially health standards. The first four criteria documents sent to OSHA following the one for asbestos were for beryllium, heat stress, carbon monoxide and noise. The beryllium and heat stress documents were submitted to OSHA in July 1972, and the carbon monoxide and noise documents were sent in August 1972. In July, OSHA, anticipating the documents on carbon monoxide and noise, announced that four advisory committees would be appointed to make recommendations for each substance.

In January 1973, OSHA announced that advisory committees on noise and heat stress had finally been appointed and that committees on beryllium and carbon monoxide were in the final stages of appointments. In other words, it took OSHA about six months from the time it received the documents to merely make appointments to the advisory committees. These committees must now meet, study the documents and other pertinent information and then make a recommendation to the Secretary of Labor. Under the Act, the Secretary may allow up to 270 days for the advisory committee to make its recommendation, although the law suggests that such recommendations be forthcoming within 90 days. Once the committee has made its report, the Secretary must then allow time for public response to the proposed standard either through written comments or public hearings (or both, at the discretion of the Secretary). The Secretary must then weigh all of the evidence and issue a standard.

The point to be made here is that the Secretary need not take the advisory committee route with respect to general industry standards (he must use advisory committees in the promulgation of new construction industry standards). The inherent problem with advisory committees, other than the ordinary bureaucratic mumbo-jumbo, is finding the people with the necessary experience and time to serve as members. The problem is compounded by the fact that the committees must have balanced representation from labor and industry.

With regard to health standards, OSHA's advisory committee policy is also questionable on the grounds that it is NIOSH's responsibility to make the necessary recommendations. As pointed out in Chapter VI, NIOSH has a 10-stage review process which includes a review by outside professionals. Thus, OSHA's reliance on its own health standards advisory committees appears to indicate that OSHA either does not trust NIOSH professionalism, or it prefers to arrive at a political consensus through a committee of its own. The truth is probably a composite of both.

Related to this situation is the fact that OSHA's office of standards has no medical doctors or health scientists, in other words no staff capability for reviewing NIOSH's work to determine its adequacy. When this point was raised, the response from OSHA officials was "that is not our responsibility; it is NIOSH's responsibility to come up with sound recommendations." If this is truly the case, then why appoint a separate advisory committee for health standards? If NIOSH's recommendations are indeed sound (and OSHA has no staff of its own to judge otherwise), then why not move directly into the public-response stage of the 6 (b) process where labor, industry and independent medical scientific researchers would have an opportunity to question and examine NIOSH's work?

For its part, NIOSH's greatest policy "sin" appears to have been its failure to fully explore alternatives to the costly and time-consuming criteria document process. In his speech to the American Public Health Association, Dr. Key blamed the Act for its "simplistic approach." While some of the blame does belong with the Act, a careful reading of its text indicates that its approach to occupational health standards is not as rigid as Dr. Key would lead us to believe. The last sentence of Section 6 (b)(5) states, "Whenever practicable, the standards promulgated should be expressed in terms of objective criteria and of the performance desired." This can certainly be read to mean that when it is not practicable to express a standard in terms of objective criteria and performance, the standard should be expressed some other way. To date, most of NIOSH's effort has been expended on developing objective numerical criteria for exposure levels based upon dose-effect relationships and bio-medical values.

One alternative to this bio-medical, health-oriented research approach is the development of performance standards based on engineering controls. Once a substance or groups of substances have been judged to be hazardous, we do not necessarily have to wait for all of the bio-medical research to be conducted before steps are taken to control the hazard. Some would say that this is not a proper course since no one knows what numerical levels the performance standards should be geared towards. Some substances are so dangerous that the level should be set at zero, e.g., certain known carcinogens. There are also those 450 or so substances which already have TLVs upon which control standards could be based. At the present time all the TLVs say is that exposure should not occur above cer-

tain levels. There is nothing which dictates how the exposure is to be controlled. Employees are now working with TLV substances without knowing whether they are being protected. The only way to determine whether the TLVs have been violated is for an industrial hygienist to take a sample, and return to the laboratory for its analysis. By that time, it is too late, for if the hazardous exposure occurred at the time of sampling, the damage will have been done. It is academic to the worker's health to learn after the fact that he has been exposed to a hazardous level.

NIOSH should take all that is already known and develop performance standards recommendations based upon engineering controls. At a minimum, such an approach will afford workers with more protection than they now have. Given NIOSH's resources and the multitude of industrial substances in use, it is folly to expect that significant numbers of workers will enjoy even a measure of protection unless alternatives to the present criteria document development process are instituted.

OSHA has been criticized in this section as being too reckless in issuing the initial standards package, and NIOSH has been criticized as overly cautious. The justification for this apparent dichotomy lies in the fact that a great deal was already known about many of the safety standards contained in the initial package and a careful appraisal could have resulted in better initial standards. For the most part, all that was necessary were better management procedures and a little time. In terms of the health standards, on the other hand, little was, or is, known. Therefore, it is incumbent upon the government to take what knowledge does exist and issue the best health standards possible.

One final word on OSHA. In terms of overall priorities, standards and standards development do not appear to be high priorities compared to OSHA's other primary functions: enforcement, state programs, training and education and safety and health statistics. Priorities, in the final analysis, are determined by the allocation of funds. In OSHA's fiscal 1972 budget and its budget requests for fiscal years 1973 and 1974, standards activities were programmed for the least amount of funds.

	(all figures shown in millions of dollars)		
	<u>1972 budget</u>	<u>1973 request</u>	<u>1974 request</u>
1. Enforcement	\$16.793	\$23.285	\$24.939
2. State Programs	7.781	29.975	30.080
3. Training and education	2.294	3.294	3.491
4. Statistics	3.345	4.600	4.841
5. Standards	2.220	2.800	2.995
6. Executive direction - administration	4.024	3.546	3.530

While these figures demonstrate that standards have consistently had the lowest budgetary priority, they must be considered with two additional observations. First, a good portion of standards development lies with NIOSH, and, second, a dollar spent on standards will probably produce more than a dollar spent on enforcement. That being accepted, it still appears that certain standards activities are not being undertaken because of budgetary limitations. In December, for example, OSHA standards chief Scannell was reported to have said that staff and time limitations prevented OSHA from including the entire national consensus standards in the existing standards.

In addition to the aggregate budgetary figures, there is also some question on how OSHA plans to use a portion of its standards budget. During the congressional appropriations hearings on the fiscal 1973 budget, OSHA indicated that most of the \$600,000 increase for standards activities was earmarked for an expected increase in the number of standards advisory committees. As pointed out above, there are some questions as to the efficiency of OSHA's advisory committee policies.

The fourth conclusion is more of a prediction than anything else and pertains to an area which could be one of the major standards battlefields in the near future: standards for industrial medical programs. Sub-part K of the general industry standards deals with medical and first-aid requirements. According to OSHA's briefing book, the purpose of this sub-part is to ensure that the health of employees will be adequately protected and that adequate emergency facilities are readily available. While this is its purpose, the briefing book also stated that the present requirement "does not adequately cover the necessary functions of medical supervision." The briefing book recommended 6 (b) standards to "adequately cover pre-placement examinations requirements, medical control requirements and medical personnel and facility requirements for industry."

In effect, the briefing book recommended federal standards to regulate industrial medicine. The issue, of course, is should the federal government undertake such regulatory action and, if so, how? Dr. Marcus Key and other NIOSH officials have expressed opposition to mandatory standards. The Industrial Medical Association and its affiliate, the Occupational Health Institute, are also opposed, seeking, instead, some sort of voluntary accreditation system, a model of which is now under study by the OHI through a NIOSH contract. Organized labor and some public interest groups, on the other hand, support mandatory standards, claiming that the present industrial medical system has not met the needs of workers. When interviewed, Gerald Scannell expressed the personal opinion that additional medical standards were necessary and required.

A good part of the problem lies in the fact that no one knows the true state of industrial medicine in this country. The statistical surveys of NIOSH and OSHA may shed some light on the quantity and quality of doctors and nurses involved in industrial medicine, numbers of dollars spent on such programs by industry and the various kinds of minimum programs available.

The issue, of course, will not wait for the statistics, and once a position has been adopted by labor and other to pursue the issue, the government will have to make a decision one way or another. Whatever the outcome, the process can be expected to assume controversial political dimensions.

The final conclusion has to do with the economics of complying with standards. It is another one of those undeniable facts that the requirements of the standards will necessarily dictate increased costs to American industry. As better and more stringent standards are developed and promulgated, the costs will go up. At this point all that is known is that certain industry groups have made estimates on the cost of compliance. However, no hard acceptable economic data have been produced to support these estimates, nor, on the other hand, has anyone produced data to demonstrate how much of an economic benefit

will result from safer and healthier workplaces. Such widespread ignorance is likely to produce in the future many exaggerated estimates, calculated more for their political impact than anything else.

Be that as it may, OSHA, with some prodding from the Office of Management and Budget, has decided that the economic impact of a standard will be a part of its overall standards equation. The question still to be determined is to what degree the economics of a given standard will affect the final requirements as promulgated. Deputy Assistant Secretary Chain Robbins confided that OSHA does not want to be in a position of trading lives for dollars, but that economic factors have to be considered in the setting of standards. Unless OSHA comes up with some magic new formula, standards which afford workers better protection are simply going to cost more than no standards or poor standards, and there is no practical way of getting around it. Thus, on every new standard proposed, OSHA must decide at what point economics determines the stringency of a standard.

APPENDIX A

American National Standards Institute

The American National Standards Institute (ANSI) is one of two nationally recognized standards-producing organizations intended by Congress as the source of "national consensus standards."

Under Sections 3 and 6 (a) of the Act, "national consensus standards" can be promulgated by the Secretary of Labor for a period of two years from the effective date of the Act.

To date, OSHA has promulgated about 120 ANSI standards as national consensus standards, most of which are safety as compared to health standards.

While national consensus standards will no longer be applicable after April 28, 1973, former Assistant Secretary of Labor, George Guenther, has indicated that ANSI will have a significant role in the development of standards even after the two-year period expires.

ANSI Membership and Functions

ANSI is a voluntary, non-profit organization composed of scientific, technical, trade, professional, consumer and labor organizations. In 1969 these member groups numbered 160 and represented roughly 95 per cent of the standards-developing capability in the private sector.

In addition to member groups, ANSI also has company members which in 1969 numbered 900. These company members are not directly involved in standards development or approval and have direct company votes only on matters of policy. In 1969 the combined company membership accounted for about 50 per cent of ANSI's operating budget, the other 50 per cent coming from the sale of standards.

ANSI's primary function is to act as "a clearing house to coordinate the work of standards development in the private sector, which is currently carried on by nearly 400 different organizations." In this respect ANSI has three principal focal points; the development of national consensus standards, the development of non-governmental international standards and the certification of national and international performance and safety standards.

National Consensus Safety Standards

Out of the 277 ANSI National Standards Committees (1969), 63 were safety committees with a total membership of 1,783.

In its 1971 catalog ANSI listed some 260 American National Safety Standards. To date OSHA has accepted about 120 of these as national consensus standards.

Of the 120 ANSI standards accepted by OSHA 20 can be considered to be

health standards in that they set exposure limits on 20 hazardous substances. These so-called "Z-37 standards" are incorporated into the OSHA standards on air contaminants (part 1910.93, table G-2).

ANSI's "Z-37 Committee," composed of industrial hygienists, is responsible for the development and revision of the standards. The activities of this committee along with all other safety standards work is coordinated by an ANSI safety and health staff member.

ANSI has been attempting to deal with the problem of how to recast the Z-37 standards so as to conform with NIOSH requirements, e.g., dose-effect relations, sampling, monitoring and engineering specifications. The ANSI Z-37 Committee has also been working on the development of new health standards.

Organization

ANSI is composed of six basic organizational units: board of directors, international standards committee, board of standards review, company member council, member body council and consumer council. In terms of the development and promulgation of national consensus standards, the two most important units are the member body council and the board of standards review.

Member Body Council: According to ANSI's by-laws the member body council is composed of non-profit technical, professional, scientific, trade or other membership organizations of national scope and recognition. Included in the membership of the council are representatives of state, local and federal governments.

The principle responsibilities of the Member Body Council are:

1. Promote initiation of new standards projects.
2. Evaluate need for new standards and revision of existing standards.
3. Develop and maintain all procedures relating to the preparation and designation of standards.
4. Define the scope of proposed standards projects and assign administrative responsibility.
5. Manage standards activities through the appropriate technical advisory board.
6. Identify areas in which certification programs are needed and obtain appropriate action. Promote acceptance of certification programs of the Institute.
7. Ensure that those who may be affected by a particular standards activity will have their views heard and evaluated.

The primary organizational units of the member council are the Executive Standards Board, which manages a variety of technical advisory boards that, in turn, coordinate the activities of the American National Standards Committees and other standard sponsors.

The actual work on proposed consensus standards is done at the American National Standards Committee level. In 1969 these committees numbered 277 and were coordinated by 18 technical advisory boards. According to Donald Peyton, ANSI's Managing Director, "there are absolutely no ANSI membership requirements for participation in the technical work of these boards or committees."

Board of Standards Review: The function of the Board of Standards Review is to determine whether a consensus on a proposed standard exists, and if so, to formally approve the standard as an American National Standard.

The Board is composed of 15 members appointed by ANSI's president in consultation with the chairmen of the councils and with the approval of the board of directors.

The primary responsibilities of the Board of Standards Review are:

1. Determine that all substantially concerned parties shall have had an opportunity to express their views, and make certain that those views shall have been carefully considered.
2. Ensure there shall be evidence of use or of potential use of a proposed American National Standard.
3. Guarantee that before final approval, any recognized significant conflict with another American National Standard shall have been resolved.
4. Validate that the proposed standard shall be in accord with the public interest.
5. Scrutinize evidence of the technical quality of the proposed American National Standard.

Procedures for Recognition and Approval of Standards

While ANSI's recognition and approval process can involve a multitude of actions, there are four basic steps to the process:

1. the initiation of a proposed standard: Proposed standards can come either from a member body (or other "responsible party") or an American National Standards Committee. Usually, before a sponsor can submit a proposal he must subject the measure to a vote of those organizations "substantially concerned" or affected. The general rule is that a proposed consensus standard must receive a favorable four-fifths of the vote.
2. ANSI's determination of compliance: This determination is made by ANSI's staff. After the determination is completed the staff then refers the proposal to the Executive Standards Board, makes a determination on the comment period and publishes the proposed standard for public comment.
3. public review and comment: A specified time period is allowed for comment. Negative or adverse comments must be redressed by the sponsor before further action is taken.
4. action by the Board of Standards Review: The Board will either approve or reject the proposal. This action occurs if there are no negative comments or if negative comments have been reconciled by the sponsor.

APPENDIX B

Priority List of Criteria and Standards Safety Research Projects

(based on report prepared for NIOSH by Arthur D. Little, Inc.)

<u>Project</u>	<u>Relative Ranking</u>
Working Surfaces	100
Safety Equipment Footwear	46
Lifting and Moving Aids	40
Packages and Containers	37
Lifting/Moving Job Requirements	33
Loading and Unloading Operations	32
Vehicle Design, Movement and Alarm System	30
Containers and Bulk Storage	28
Machine Guards	28
Atmosphere Monitoring Systems	26
Industrial Stairs	23
Non-Electric Hand Tools	23
Personal Emergency Breathing Apparatus	21
Personal Gas Warning System	21
In-Process Maintenance and Cleaning Tools	21
Lifting/Moving Bulk Materials	21
Machinery Interlocks	18
Lifting/Moving Miscellaneous Common Objects	18
Stationary and Portable Ladders	16
Hand Tools and Overexertion Injuries	14
Scaffolding and Staging	14
Vehicle Working Surfaces	14
Objects Discharged from Equipment	12
Personal Protective Equipment for Major Body Parts	12
Personal Protective Warning Markings	12
Machine Repair and Maintenance to Reduce Overexertion Injuries	11
Portable Power Equipment Guards	11
Protective Clothing for Temperature and Chemical Exposure	11
Injuries in which other Persons are the Accident Agent	9

<u>Project</u>	<u>Relative Ranking</u>
Containers for In-Plant Use of Hazardous Chemicals	9
Vehicle Laddering, Railing, Foot and Hand Holds	7
Protective Head Gear	7
Hoisting Apparatus and Elevators	7
Gloves and Hand Protection Equipment	5
Safety Devices for Electrical Hand Tools	4
Lifting and Moving Attachment Points for Miscellaneous Equipment	4
Design, Test and Maintenance of Hooks, Rings and other Hoisting and Lifting Apparatus	4
Effects of Blind Corners	4
Excavation and Tunneling	4
Temporary Protective Measure for "Unprotected Openings"	2
Vehicular Equipment--Rollover, Enclosure and Operator Protection	2
Electrical Protective Equipment	2

APPENDIX C

Format for Criteria Document

(based on NIOSH's first Annual Report)

- I. INTRODUCTION--brief description of pertinent information to introduce the problem.
- II. REVIEW OF PROBLEM
(Example)
 - A. Recognition of Hazard
 1. Historical
 2. Presence in industrial environment--industrial use or incidental occurrence.
- III. PHYSICAL-CHEMICAL PROPERTIES--summary of the properties of the agent and related agents under study which are pertinent to the problem.
- IV. CRITICAL EVALUATION OF DATA
 - A. Biological Effects--include respiratory, dermal, gastrointestinal, etc., as well as carcinogenic, mutagenic, teratogenic and behavioral effects where applicable.
 1. Effects on humans
 2. Effects on animals
 3. Conclusion--include areas for future investigation
 - B. Methodology--information pertinent to the problem. Utilize reference sources for extensive discussions or procedures.
 1. Environmental sampling methods
 2. Analytical or measurement of exposure
 3. Biological analytical methods
 4. Conclusion
 - C. Medical--include epidemiologic evidence, diagnostic methods, examination schedules and clinical tests as applicable.
Conclusion
 - D. Safety Hazards and Precautions--include fire, explosive, corrosive, radiation, etc., as applicable.
Conclusion
 - E. Protective Equipment
 1. Respiratory devices
 2. Protective clothing
Conclusion
 - F. Control Procedures--information leading to current recommendations and specific values for standards where applicable for:
 1. Labeling and warning devices
 2. Housekeeping, maintenance and clean-up operations
Ventilation--due to established engineering methods, references only are generally needed
 3. Enclosure and isolation methods--brief comments with references generally suffice

5. Waste handling and discard
6. Conclusion

V. SUMMARY

VI. REFERENCES--references to literature cited.

VII. APPENDIX--THE RECOMMENDED STANDARDS AND PROCEDURES

A. Recommended Standards

1. Environmental standard--specific values which refer to a 7- or 8-hour workday and 40-hour workweek. Special recommendations are to be given for carcinogenicity, unusual thermal decomposition problems, mixtures and similar areas of special concern. Excursion and recommended ceiling values will be listed if applicable.
2. Biological Standard--specific values for blood, urine or breath if applicable.

B. Recommended Field Sampling, Analytical or Measurement Methods--each recommended method is to be presented in detail, step by step.

1. Environmental exposure methods
 - a. Sampling
 - b. Analytical and/or measurement
2. Biological methods
 - a. Sampling
 - b. Analytical and/or measurement

C. Medical Procedures

1. Criteria for diagnosis of disease
2. Examinations
 - a. Type
 - b. Specific intervals
3. Clinical test methods
 - a. Type
 - b. Specific intervals

D. Recommended Safety Procedures--fire, explosive, corrosive, radiation, etc., as applicable.

NOTE--If any factor for the agent under study presents an immediate potential health hazard considered greater than inhalation or direct surface exposure, i.e., explosion or fire, precedence should be given to this factor in listed order of The Recommended Standards and Procedures.

E. Protective Equipment

1. Respiratory devices
2. Protective clothing

F. Control Procedures

1. Labeling and warning devices
2. Housekeeping, maintenance and clean-up operations
3. Ventilation
4. Enclosure and isolation methods
5. Waste handling and discard

APPENDIX D

NIOSH Priority List for Toxic Substances and Physical Agents

(based on first Annual Report of the President on
Occupational Safety and Health)

Criteria Developed:

Asbestos
Inorganic Lead
Heat Stress
Ultraviolet Radiation
Carbon Monoxide
Beryllium
Noise

In Progress:

Benzene
Cadmium and Compounds
Chromic Acid Mist
Cotton Dust
Fibrous Glass
Mercury
Parathion
Silica
Trichloroethylene
Coke Oven Emissions
Toluene Diisocyanate
Toluene
Sulfuric Acid
Sulfur Dioxide
Arsenic

Priorities:

1. Bis(Chloromethyl)Ether
2-Naphthylamine
Radioactive Products of Uranium Mining
(Gaseous and Particulate)
2. Benzidine and Its Salts
Carbon Tetrachloride
Ozone
Tin and Compounds
3. Chromium Compounds
Dichlorobenzidine
Oxides of Nitrogen
Sodium Hydroxide
4. Carbaryl
Chloroform
4-Dimethylaminoazobenzene
Nitric Acid
5. Ammonia
beta-Propiolactone
Epoxy Resins
Methylene Chloride
4-Nitrodiphenyl

6. Asphalt Fumes
Ethylene Dichloride
Fluoride and HF
Polychlorinated Biphenyls
Tetrachloroethylene
7. 2-Acetylaminofluorene
Chlorobenzene
Methylene Bisphenyl
Isocyanate (MBI)
Phosgene
Trichloroethane
8. Acetone
4-Aminodiphenyl
Dieldrin
Malathion
N-Nitrosodimethylamine
9. Aniline
Copper and Compounds
Cyanides
Styrene
Zinc and Compounds
10. Chloroform
Formaldehyde
Manganese and Compounds
Phenol
Platinum and Compounds
11. Acrolein
Aluminum and Compounds
Carbon Disulfide
Methyl Ethyl Ketone
Vinyl Chloride
12. Creosote
Methyl Chloride
Nickel and Compounds
Phosphorous and Compounds
Tetrachloroethane
13. Acrylonitrile
2,4-Dinitrophenol
Magnesium and Compounds
Methyl Alcohol
Paraffin
14. Ammonium Nitrate
Cold Stress
Dioxane
Fluorine
Microwaves

15. Hydrogen Chloride
Ethyl Benzene
Nitroglycerin
Vibration
Xylene
16. Methyl Butyl Ketone
Mineral Spirits
Oil Mists
Selenium and Compounds
Turpentine
17. Arsine
Gasoline
Kerosene
Iron and Compounds
Petroleum Naphtha
18. Barotrauma
Cresol
Paraquat
Portland Cement
Talc
19. Carbon Black
Coherent Energy (Laser Radiation)
Ethylene Oxide
Impact Noise
Proteolytic Enzymes

APPENDIX E

Development Process for a 6 (b) Health Standard

NIOSH

- A. Establish research priorities.
- B. Determine the nature of information and research needs.
- C. Conduct necessary research.
- D. Prepare criteria document (nine-stage review process):
 1. contract agreement--NIOSH usually contracts with an outside professional to prepare the documents,
 2. first draft submitted to NIOSH by the contractor,
 3. first draft reviewed by an in-house NIOSH review committee,
 4. second draft submitted to NIOSH by the contractor,
 5. second draft reviewed by a committee of outside professional consultants,
 6. third draft submitted to NIOSH by the contractor,
 7. third draft reviewed by professional societies and federal agencies,
 8. final draft submitted to NIOSH by the contractor,
 9. final draft reviewed by NIOSH and the HEW hierarchy including the general council.
- E. HEW Secretary transmits criteria document to Secretary of Labor.

OSHA

- A. Initiates rulemaking procedure based on criteria document.
- B. Appoints advisory committee.
- C. Advisory committee reviews all information including the criteria document and other material provided to it and makes a recommendation.
- D. OSHA publishes a proposed standard in the Federal Register allowing interested parties 30 days to submit data and comments, or to file an objection and request a public hearing.
- E. Public hearing scheduled.
- F. Public hearing held.
- G. OSHA weighs all the evidence, including an economic impact study and possibly an environmental impact study, and promulgates a standard within two months from the public hearing. The effective date of the new standard may be delayed 90 days so that workers and employers may familiarize themselves with the new standard.

Time Involved

NIOSH estimates that it takes from 12 to 18 months to prepare the criteria document, exclusive of any additional research.

OSHA estimates that it takes anywhere from 90 days to a year from the time the rulemaking process is initiated. Experience to date, however, has demonstrated that it has taken OSHA almost six months to appoint advisory committees for those substances for which criteria documents have been prepared. Thus, the OSHA procedure could take as long as a year and a half.

Note: In the case of general industry standards, OSHA need not appoint an advisory committee. Neither is it required that public hearings be held, unless an interested party files an objection to the proposed standard during the 30 days allowed for written comments.

APPENDIX F

OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

Occupational Safety and Health Standards

Section 6 (a) Without regard to chapter 5 of title 5, United States Code, or to the other subsections of this section, the Secretary shall, as soon as practicable during the period beginning with the effective date of this Act and ending two years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees. In the event of conflict among any such standards, the Secretary shall promulgate the standard which assures the greatest protection of the safety or health of the affected employees.

(b) The Secretary may by rule promulgate, modify, or revoke any occupational safety or health standard in the following manner:

(1) Whenever the Secretary, upon the basis of information submitted to him in writing by an interested person, a representative of any organization of employers or employees, a nationally recognized standards-producing organization, the Secretary of Health, Education and Welfare, the National Institute for Occupational Safety and Health, or a State or political subdivision, or on the basis of information developed by the Secretary or otherwise available to him, determines that a rule should be promulgated in order to serve the objectives of this Act, the Secretary may request the recommendations of an advisory committee appointed under Section 7 of this Act. The Secretary shall provide such an advisory committee with any proposals of his own or of the Secretary of Health, Education and Welfare, together with all pertinent factual information developed by the Secretary or the Secretary of Health, Education and Welfare, or otherwise available, including the results of research, demonstrations and experiments. An advisory committee shall submit to the Secretary its recommendations regarding the rule to be promulgated within ninety days from the date of its appointment or within such longer or shorter period as may be prescribed by the Secretary, but in no event for a period which is longer than two hundred and seventy days.

(2) The Secretary shall publish a proposed rule promulgating, modifying, or revoking an occupational safety or health standard in the Federal Register and shall afford interested persons a period of thirty days after publication to submit written data or comments. Where an advisory committee is appointed and the Secretary determines that a rule should be issued, he shall publish the proposed rule within sixty days after the submission of the advisory committee's recommendations or the expiration of the period prescribed by the Secretary for such submission.

(3) On or before the last day of the period provided for the submission of written data or comments under paragraph (2), any interested person may file with the Secretary written objections to the proposed rule, stating the grounds therefor and requesting a public hearing on such objections. Within thirty days after the last day for filing such objections, the Secretary shall publish in the Federal Register a notice specifying the occupational safety or health standard to which objections have been filed and a hearing requested, and specifying a time and place for such hearing.

(4) Within sixty days after the expiration of the period provided for the submission of written data or comments under paragraph (2), or within sixty days after the completion of any hearing held under paragraph (3), the Secretary shall issue a rule promulgating, modifying, or revoking an occupational safety or health standard or make a determination that a rule should not be issued. Such a rule may contain a provision delaying its effective date for such period (not in excess of ninety days) as the Secretary determines may be necessary to insure that affected employers and employees will be informed of the existence of the standard and of its terms and that employers affected are given an opportunity to familiarize themselves and their employees with the existence of the requirements of the standard.

(5) The Secretary, in promulgating standards dealing with toxic materials or harmful physical agents under this subsection, shall set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life. Development of standards under this subsection shall be based upon research, demonstrations, experiments and such other information as may be appropriate. In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards and experience gained under this and other health and safety laws. Whenever practicable, the standard promulgated shall be expressed in terms of objective criteria and of the performance desired.

(6)(A) Any employer may apply to the Secretary for a temporary order granting a variance from a standard or any provision thereof promulgated under this section. Such temporary order shall be granted only if the employer files an application which meets the requirements of clause (B) and establishes that (i) he is unable to comply with a standard by its effective date because of unavailability of professional or technical personnel or of materials and equipment needed to come into compliance with the standard or because necessary construction or alteration of facilities cannot be completed by the effective date, (ii) he is taking all available steps to safeguard his employees against the hazards covered by the standard and (iii) he has an effective program for coming into compliance with the standard as quickly as practicable. Any temporary order issued under this paragraph shall prescribe the practices, means, methods, operations and processes which the employer must adopt and use while the order is in effect and state in detail his program for coming into compliance with the standard. Such a temporary order may be granted only after notice to employees and an opportunity for a hearing: Provided, That the Secretary may issue one interim order to be effective until a decision is made on the basis of the hearing. No temporary order may be in effect for longer than the period needed by the employer to achieve compliance with the standard or one year, whichever is shorter, except that such an order may be renewed not more than twice (I) so long as the requirements of this paragraph are met and (II) if an application for renewal is filed at least 90 days prior to the expiration date of the order. No interim renewal of an order may remain in effect for longer than 180 days.

(B) An application for a temporary order under this paragraph (6) shall contain:

(i) a specification of the standard or portion thereof from which the employer seeks a variance,

(ii) a representation by the employer, supported by representations from qualified persons having firsthand knowledge of the facts representations from qualified persons having firsthand knowledge of the facts represented, that he is unable to comply with the standard or portion thereof and a detailed statement of the reasons therefor,

(iii) a statement of the steps he has taken and will take (with specific dates) to protect employees against the hazard covered by the standard,

(iv) a statement of when he expects to be able to comply with the standard and what steps he has taken and what steps he will take (with dates specified) to come into compliance with the standard, and

(v) a certification that he has informed his employees of the application by giving a copy thereof to their authorized representative, posting a statement giving a summary of the application and specifying where a copy may be examined at the place or places where notices to employees are normally posted and by other appropriate means.

A description of how employees have been informed shall be contained in the certification. The information to employees shall also inform them of their right to petition the Secretary for a hearing.

(C) The Secretary is authorized to grant a variance from any standard or portion thereof whenever he determines, or the Secretary of Health, Education and Welfare certifies, that such variance is necessary to permit an employer to participate in an experiment approved by him or the Secretary of Health, Education and Welfare designed to demonstrate or validate new and improved techniques to safeguard the health or safety of workers.

(7) Any standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment and proper conditions and precautions of safe use or exposure. Where appropriate, such standard shall also prescribe suitable protective equipment and control or technological procedures to be used in connection with such hazards and shall provide for monitoring or measuring employee exposure at such locations and intervals, and in such manner as may be necessary for the protection of employees. In addition, where appropriate, any such standard shall prescribe the type and frequency of medical examinations or other tests which shall be made available, by the employer or at his cost, to employees exposed to such hazards in order to most effectively determine whether the health of such employees is adversely affected by such exposure. In the event such medical examination are in the nature of research, as determined by the Secretary of Health, Education and Welfare, such examinations may be furnished at the expense of the Secretary of Health, Education and Welfare. The results of such examinations or tests shall be furnished only to the Secretary or the Secretary of Health, Education and Welfare, and, at the request of the employee, to his physician. The Secretary, in consultation with the Secretary of Health, Education and Welfare, may by rule promulgated pursuant to Section 553 of Title 5, United States Code, make appropriate modifications in the foregoing requirements relating to the use of labels or other forms of warning, monitoring or measuring, and medical examinations, as may be warranted by experience, information or medical or technological developments acquired subsequent to the promulgation of the relevant standard.

(8) Whenever a rule promulgated by the Secretary differs substantially from an existing national consensus standard, the Secretary shall, at the same time, publish in the Federal Register a statement of the reasons why the rule as adopted will better effectuate the purposes of this Act than the national consensus standard.

(c)(1) The Secretary shall provide, without regard to the requirements of chapter 5, title 5, United States Code, for an emergency temporary standard to take immediate effect upon publication in the Federal Register if he determines (A) that employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards, and (B) that such emergency standard is necessary to protect employees from such danger.

(2) Such standard shall be effective until superseded by a standard promulgated in accordance with the procedures prescribed in paragraph (3) of this subsection.

(3) Upon publication of such standard in the Federal Register the Secretary shall commence a proceeding in accordance with Section 6 (b) of this Act, and the standard as published shall also serve as a proposed rule for the proceeding. The Secretary shall promulgate a standard under this paragraph no later than six months after publication of the emergency standard as provided in paragraph (2) of this subsection.

(d) Any affected employer may apply to the Secretary for a rule or order for a variance from a standard promulgated under this section. Affected employees shall be given notice of each such application and an opportunity to participate in a hearing. The Secretary shall issue such rule or order if he determines on the record, after opportunity for an inspection where appropriate and a hearing, that the proponent of the variance has demonstrated by a preponderance of the evidence that the conditions, practices, means, methods, operations, or processes used or proposed to be used by an employer will provide employment and places of employment to his employees which are as safe and healthful as those which would prevail if he complied with the standard. The rule or order so issued shall prescribe the conditions the employer must maintain, and the practices, means, methods, operations and processes which he must adopt and utilize to the extent they differ from the standard in question. Such a rule or order may be modified or revoked upon application by an employer, employees, or by the Secretary on his own motion, in the manner prescribed for its issuance under this subsection at any time after six months from its issuance.

(e) Whenever the Secretary promulgates any standard, makes any rule, order, or decision, grants any exemption or extension of time or compromises, mitigates, or settles any penalty assessed under this Act, he shall include a statement of the reasons for such action, which shall be published in the Federal Register.

(f) Any person who may be adversely affected by a standard issued under this section may at any time prior to the sixtieth day after such standard is promulgated file a petition challenging the validity of such standard with the United States court of appeals for the circuit wherein such person resides or has his principal place of business, for a judicial review of such standard. A copy of the petition shall be forthwith transmitted by the clerk of the court to the Secretary. The filing of such petition shall not, unless otherwise ordered by the court, operate as a stay of the standard. The determinations of the Secretary shall be conclusive if supported by substantial evidence in the record considered as a whole.

(g) In determining the priority for establishing standards under this section, the Secretary shall give due regard to the urgency of the need for mandatory safety and health standards for particular industries, trades, crafts, occupations, businesses, workplaces or work environments. The Secretary shall also give due regard to the recommendations of the Secretary of Health, Education and Welfare regarding the need for mandatory standards in determining the priority for establishing such standards.



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