

FILE NAME: National Safety Council (NSC)

DATE: 1966

DOC#: NSC093

DOCUMENT DESCRIPTION: NSC - National Safety Congress Transactions Vol. 3

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VOLUME 3

1966

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CONSOLIDATED REPORT OF LABOR CONFERENCE

By J. GEORGE EICHHORN

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Representative, International Assn. of Machinists and Aerospace
Workers, AFL-CIO, Daytona Beach, Fla.

This consolidated report is brief; however, there has been mailed to all union organizations holding National Safety Council membership a copy of the printed annual report covering labor activities for the year. That printed report, together with these remarks, will give you an overall picture of the operations and program carried on in behalf of union organizations working in the safety movement.

Our Spring meeting was held last May in San Francisco; our fall meeting was held October 21 and 22, just prior to the opening of the National Safety Congress.

The Labor Conference is authorized by the Constitution and By-Laws of the National Safety Council. Its purpose is to prevent accidents to labor union members, their families, friends, and neighbors.

The Labor Conference develops the programs, activities, accident prevention procedures, and other projects for union organizations affiliated with the National Safety Council. The programs of the Labor Conference are carried out by the staff of the National Safety Council's Labor Department.

The Labor Conference is divided into various committees charged with specific responsibilities. It is the work of these committees which is summarized here.

Awards Committee

The Awards Committee met four times this year. In August they held their annual judging of entries submitted for labor safety awards and granted 15 awards to unions and individuals for outstanding safety accomplishments during 1965. The committee is currently engaged in revising the rules governing the granting of awards to individuals. This change will take effect in the coming year.

Congress Program Committee

This committee has the tremendous responsibility of setting up four days of labor sessions for the 1966 Safety Congress. They

met three times this year and, as your printed program will attest, they have secured outstanding speakers and introduced some innovations.

Special promotion of the Congress program has been conducted throughout this year, including articles in the *Labor Safety Newsletter*. An official "Meeting Call" issued by the Vice President for Labor was mailed this summer to all labor organizations holding National Safety Council membership. It was also sent to the labor press with the request that they give extensive publicity to our labor sessions.

Executive Committee

This committee has acted for the conference between regular meetings of the conference. All actions of the committee are subject to approval, ratification, and confirmation by the conference. The committee has the power to create standing and special committees, schedule meetings of the conference, and act on committee reports and other matters within the framework of National Safety Council policy.

Activities of the committee during the year included: establishment of a Public Relations Committee; assigning additional responsibilities to the Off-the-Job and Driver Improvement Committee; reviewing program goals for the Labor Department for the next three years; clarifying the scope of activities for the Fire Protection and Public Safety committee; establishing a requirement that if any conference member does not attend three consecutive meetings, he is to be automatically dropped and will not be reappointed for the following year, *unless* otherwise excused; and approving certain changes in the official award rules and application form for the labor safety awards program.

Throughout the year the committee has been operating on a streamlined schedule set up so as to accelerate and better implement its work.

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Fire Protection and Public Safety Committee

During 1965-66 this committee turned out a steady stream of feature articles for the *Labor Safety Newsletter*. They have scheduled articles through the May-June, 1967 issue, and are laying plans for the balance of next year.

At the international convention of the Fire Fighters Union this fall, a series of resolutions on safety were passed. One of them deals with building up membership in the National Safety Council from among their locals; another deals with a uniform system of identification of hazardous materials.

The scope of this committee was enlarged this year. Previously it was called the Fire Safety Committee, but it was changed to become the Fire Protection and Public Safety Committee. Their work will now include accident prevention problems relative to the safety of the general public assembled in schools, office buildings, auditoriums, hospitals, restaurants, department stores, and similar places.

Government and Labor Agencies Committee

Last October, this committee requested the National Safety Council's Board of Directors to arrange for a Safety Congress program for administrators of state industrial safety laws for the purpose of education and exchange of ideas.

During the year the committee requested and got National Safety Council board action on a number of matters, including a request to the U. S. Department of Labor that it continue its survey of existing safety standards, staffing, functions, and performance of state labor departments.

International Labour Safety Committee

This committee was established in April, 1965, at the spring meeting of the Labor Conference in Puerto Rico. One of the first activities of the new committee was to inform all major international labor organizations throughout the world of its existence and responsibilities, and inviting them to join the National Safety Council. Plans were drawn to give the committee more publicity and establish programs for the future. At their spring meeting they received authorization to print a special leaflet describing the committee, to give impetus to its work in promoting safety and giving assistance to

labor unions on a worldwide basis. This leaflet is now ready.

Currently, there are unions in West Germany, Switzerland, Israel, and Trinidad, British West Indies holding National Safety Council membership.

Labor Day Safety Campaign

This ad hoc committee under chairman Bob Farrell was responsible for conducting the 1966 campaign. They met in Washington last January to map out the campaign. They changed the format and planned the materials primarily for editors of labor publications.

Over 3,000 campaign booklets were sent to all international unions, state and local central bodies, building trades councils and other labor bodies this year.

Membership Committee

This committee reports an increase of 63 new members. Drives among the Machinists, the Oil, Chemical and Atomic Workers, the Operating Engineers, and IBEW have helped boost the membership. Special efforts have been made to build membership throughout Canada. Various members of the committee have pledged themselves to make special contacts in their areas to gain new members through a personal approach.

Just recently, the International Fire Fighters and International Brotherhood of Electrical Workers passed resolutions at their respective conventions, urging their locals to affiliate with the National Safety Council.

Occupational Health and Research Committee

This committee is currently working to get surveys made on heat, dust, and noise in all industries by the U. S. Department of Health, Education, and Welfare.

They have been studying the results of a radiant heat survey requested by the United Auto Workers which was made in a large foundry in Kentucky by the Kentucky Department of Occupational Health. The union employees gave 100 per cent cooperation in this study.

Another current project of this committee is securing the proper labeling of all hazardous materials used in industry.

Off-the-Job Driver Improvement Committee

An off-the-job safety column has been appearing regularly in the *Labor Safety Newsletter*.

The committee arranged for a special chart on "State Priority Traffic Needs" to be printed so that all labor delegates attending this Safety Congress can obtain a set in condensed form and take the information home with them and start working on promoting their own state's needs.

The committee is continuing their emphasis on five points of traffic safety, started a year ago, and have taken on additional assignments, including: promoting and supporting the *Uniform Traffic Safety Code*, the use of a flasher above school signs on streets and highways when the regulation is in effect, and safety emphasis on the use of motorcycles.

Publications and Newsletter

The committee arranged to have a special publicity form printed for labor delegates to mail to their hometown newspapers, reporting on their attendance at this year's Safety Congress.

The *Labor Safety Newsletter* appeared on schedule throughout the year and contained many feature articles written by Labor Conference members. The Fire Safety Committee faithfully supplied a series of articles and these have appeared on schedule. The off-the-job safety column is now a well-established regular feature of the newsletter.

The committee has now started its task of reviewing the *Safety Guide For Unions* manual, preparatory to revising it before the next reprinting. This job will be completed during 1967.

Public Relations Committee

The committee was set up during our May conference meeting and is responsible for the union safety booth at the Safety Congress.

Radiation Safety Committee

The committee is working on a booklet covering regulations, hazards, and safe working methods in the radiation industry. Target is February, 1967, for prepared material for assigned chapters so the committee will be able to review them at their spring meeting.

The committee is studying the proposed federal grants-in-aid to states which comply with Atomic Energy Commission criteria on recording radiation exposure.

The committee has been getting regular reports on the Canadian Labour Congress committee which is promoting radiation safety regulations in Canada.

Safety Training Committee

This committee is currently engaged in expanding their promotion of the home study course for union members. Promotion has already been conducted on the National Safety Council Safety Training Institute.

The Federal Committee on Apprenticeship now includes safety in its recommended apprenticeship standards. This was initiated by the Safety Training Committee.

Plans are under way to develop a campaign based on "Where's Charley?" and a flyer will be developed to accompany each sticker so that drivers know the background of the idea.

The committee received Labor Conference approval to promote a pledge entitled "We Believe" to be used in union publications and on bulletin boards.

✓ WINNERS OF 1965 LABOR CONFERENCE SAFETY AWARDS

Presented at labor session of 54th annual National Safety Congress and Exposition, October 24, 1966, by J. George Eichhorn, Outgoing Chairman of NSC Labor Conference; Grand Lodge Repr., International Assn. of Machinists, Daytona Beach, Fla.

In 1960 the Labor Conference of the National Safety Council approved an award plan designed to give tangible recognition

for outstanding safety efforts by union organization and individual members of the labor movement.

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The first such awards were presented at the 1961 National Safety Congress, honoring union organizations and individuals for outstanding efforts during 1960.

The award for organizations has been designated the "Harry Read Memorial Award for Labor Organizations." This award was named in honor of the late assistant to the secretary-treasurer of AFL-CIO for his dedicated work in promoting labor participation in organized safety, for his service on the National Safety Council's board of directors, and for his efforts as one of the founders of the Labor Conference.

There are three categories for the "Harry Read Memorial Award." These are:

- a) Award of Honor
- b) Award of Merit
- c) Award of Commendation

Awards to individuals in the labor movement are called "Citations" and are three in number:

- a) Citation for Distinguished Service to Safety
- b) Citation for Outstanding Service to Safety
- c) Citation for Meritorious Service to Safety

This year we are pleased to announce that 15 of these coveted awards have been granted to nine union organizations and six individuals. Limited time prohibits my enumerating all the reasons why the awards were granted and I can only tell you about a few of the highlights for each organization and person being honored.

Undoubtedly some delegates represent local or international unions which are conducting an outstanding safety program and should have applied for an award, but did not. I want to urge you to be sure and send in your application in ample time to meet next year's deadline and receive an award for which you may be qualified.

The award application and entry forms are automatically mailed to all labor organization members of the National Safety Council in January or February every year, and the deadline for submitting entries is July first of every year. Keep this in mind

and make it a point to submit your entry before July 1, 1967.

One thing should be emphasized about every winner. They filled in the application and entry forms correctly, they answered all questions in detail, and they furnished ample supporting documentary evidence so the judges would have something tangible on which to base their decision.

Award of Commendation to UNITED STEELWORKERS LOCAL NO. 2659 Southgate, Mich.

The excellent accident prevention work of this local was clearly shown in the documentary materials sent to the Awards Committee. They have an active joint labor-management safety committee, they investigate accidents, keep accident records, regularly inspect the plant premises, and are providing safety training for their members. The first student ever to graduate from the National Safety Council's home study course for unions is a member of this local.

The Awards Committee warmly commends them for their efforts and particularly notes they have established a good foundation for a well-rounded safety program. Their contracted company is McLouth Steel Corp.

Award of Commendation to INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS LOCAL NO. 1245 Oakland, Calif.

This local keeps a continual safety surveillance at union headquarters by evaluating accident reports, potential hazards reports, and accident investigation reports on a daily basis, and following up on problems as they arise. Help is requested from the appropriate governmental or other agency to see what regulations or standards are applicable. The local union staff is active in various localities in the promotion of community safety. One example has been their efforts in assisting in the establishing of criteria for ambulance service and recreational safety. Members also actively serve on state committees concerned with safety rules and standards. Their members work in different utilities and power companies, different transit authorities, irri-

gation districts and municipalities on the Pacific coast.

Award of Commendation to
INTERNATIONAL ASSOCIATION
OF MACHINISTS,
AIR CAPITOL LODGE 1650
Riverside, Mo.

This local is carrying on a strong program in safety education for its members, three of whom are currently taking the National Safety Council's home study training course for unions. Their joint labor-management safety committee functions most effectively, with agendas, minutes, and good follow-up. This local gives extensive publicity to safety. They are also active in community safety projects involving the Boy Scouts, Girl Scouts, and the Red Cross. Their company is TWA Overhaul Base.

Award of Commendation to
UNITED STEELWORKERS
LOCAL NO. 4108
Aurora, Minn.

The Awards Committee noted the extremely well-rounded accident prevention program for its members that is conducted by this local. Their meeting minutes, agendas, accident investigation reports, and accident records, as well as their regular safety inspection reports, reveal continuity and follow-up on hazardous situations and unsafe practices. Extensive publicity is given to their safety program. Their contracted company is the Erie Mining Company of Pickands Mather Company.

Citation for Meritorious Service to Safety to
DUANE PLAGEMANN, General Safety
Chairman, United Steelworkers Local
No. 4108 of Aurora, Minn.

Brother Plagemann has earned special recognition for individual efforts in his local union. The depth to which he goes into the problems and in organizing and coordinating the safety activities of the local are far beyond his required duties. He has set up a safety library in the union hall, and it is constantly growing. He develops outstanding reports covering specific details. He extended substantial efforts to have labor officials, safety people, and union members take part in safety award presentations. He has vol-

untarily taken safety training courses and distinguished himself in his studies and grades and, most importantly, has applied this knowledge to benefit and greatly assist the safety program of his local union.

Award of Merit to
OIL, CHEMICAL AND ATOMIC
WORKERS LOCAL 4-447
Destrehan, La.

This makes the second consecutive year that this local has earned an award, and it is gratifying to see that they have again qualified for recognition. They received an Award of Merit in 1964, and their efforts since then have assured the continuity that is so important in keeping a good safety program "going and growing." They gave 100 per cent support to the National Drivers Test this year. They earned an award from the city of New Orleans for promoting traffic safety. They arrange outstanding safety presentations during monthly meetings in the union hall, show a variety of safety films, and constantly promote safety education through various effective mediums in their area.

Award of Merit to
UNITED STEELWORKERS
LOCAL 6500
Sudbury, Ont., Canada

In addition to an active general safety and health committee, this local has committees in each plant. They conduct schools and seminars at the local level, bringing in safety organization people, government officials, and other qualified instructors. They also send delegates to safety seminars, schools, and courses not only in their own province, but all across Canada. They regard safety training as a vital key in their overall program. They publicize safety through local television, plant bulletins, and their own paper. Members are also active in off-the-job and community safety projects.

Award of Merit to
BAKERY & CONFECTIONERY
WORKERS LOCAL NO. 3
Long Island City

Our Awards Committee is granting recognition to this local for the third consecutive year.

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"Continuity" is the key word describing the activities of this local. They continue to build on their excellent safety program and these efforts show constant improvement in achieving safety and health for their members. They have excellent joint labor-management safety committees in the plants and bakeries in their area. They continue to give extensive publicity to safety, and have stepped up intensive safety training courses for their members.

Citation for Distinguished Service to Safety to

MURRAY MILLER, Coordinator, Safety Committee, Bakery and Confectionery Workers Local No. 3, Long Island City

Brother Miller's individual efforts have been outstanding. He puts in 40 hours a week as a baker in the shop and is not an officer of the union. He coordinates four joint labor-management-government-plant safety committees on his own time and expense. He works with and is developing the Ladies Auxiliary Home Safety committee. He initiated an apprenticeship and training program to train 75 youths and has been elected to administer this project. He initiated and succeeded brilliantly in putting on a lung-test project as a joint effort between the New York State Department of Labor and his local union. The chests and respiratory systems of 728 bakery workers were checked — the first such survey since 1911.

Brother Miller has received for two consecutive years a "Citation for Outstanding Service to Safety." This year the Awards Committee is conferring upon him a "Citation for Distinguished Service to Safety."

Citation for Outstanding Service to Safety to

JOSEPH LEONARD, Safety Director, International Longshoremen's Assn., New York City

For nine years Joe Leonard has not only performed admirably all the duties of his office, but has spent countless extra hours on special research, photographing violations, giving speeches before interested groups outside his union, writing magazine articles, newspaper interviews and features on safety. He has strongly promoted off-the-job safety, has arranged for safety training for all New York ILA stewards, documented and pre-

sented testimony before Congressional hearings relative to improving legislation pertinent to longshoremen's safety, and actively participates in various safety programs of the city's fire department and state and federal agencies.

Citation for Outstanding Service to Safety to

THEODORE MRUK, Textile Workers Union Local 190, Chicago

Nick P. Kotos, who is past president of Textile Workers Union Local 190, is here to accept a citation on behalf of Brother Theodore Mruk, who died very recently.

Brother Mruk's activities in safety have encompassed not only the company which employed him, and in his own local union as safety chairman, but also volunteer work with the Chicago Police Department's Safety Division; and the Heart of Chicago Community Council, where he served as safety director. Over the years he had been instrumental in establishing guide lines and procedures (as his local's safety representative) jointly with the management of Western Felt Works, with the result that safety practices and methods have greatly improved. He was one of the founders of the joint labor-management safety committee in the company, and made many contributions in the establishment of safety rules, as well as education of plant workers. His off-the-job safety activities have been notable in the organizations mentioned earlier.

Award of Merit to UNITED STEELWORKERS LOCAL 4413 Magna, Utah

This local has an active joint labor-management safety committee which meets twice a month; more often when necessary. They investigate accidents, keep accident records, and inspect work premises. Safety training is considered a vital part of this local's safety program, and members have attended different courses. For example, six members attended the 18-hour class on safety at the University of Utah. Off-the-job safety comes in for attention too. Members are active in Boy Scout safety programs, and participate in local community safety projects. Their contracted company is the Kennecott Copper Corp.

*Citation for Outstanding Service
to Safety to*

EUGENE L. WILLIAMS, Safety
Chairman, United Steelworkers
Local 4413, Magna, Utah

In addition to his plant and union safety activities, Brother Williams is safety chairman for the local Lions club, the district Lions, and the Utah state Lions. He is safety chairman for the PTA of the community high school, he heads safety activities for the district area of Boy Scouts, and also for the state board of the Society for the Prevention of Blindness. He is serving in the House of Representatives for the state of Utah, on the Public Safety Committee. These are *not* just "positions" he holds. In each of these organizations he plans, promotes, and conducts health and safety activities, and helps train leaders. He has completed many hours of safety training courses, which he has voluntarily taken, and puts this knowledge to work in the many areas where he serves.

Award of Merit to

SEAFARERS INTERNATIONAL
UNION OF NORTH AMERICA
Brooklyn, New York

The Seafarers International Union, both

independently and in cooperation with operators of SIU-contracted vessels, conducts a number of inter-related and supplementary safety activities. Their members are repeatedly trained and retrained in safe working practices and emergency procedures. The Seafarers Union, besides carrying on educational and informational efforts aimed directly at its members, works with management towards safety objectives and is a central clearing house for the distribution of safety materials and information to be used by management.

*Citation for Outstanding Service
to Safety to*

JOE ALGINA, International Safety
Director, Seafarers International Union

Despite the heavy work load of his regular duties as SIU safety director, and the widespread geographical areas which he must cover, Joe Algina has found the time to prepare speeches and articles on safety, participate in many safety conferences, conduct safety training, and handle off-the-job safety projects. One of them is handling safety activities for the local Boy Scouts in his community.

A MODEL LABOR-MANAGEMENT MEDICAL PROGRAM

By J. B. LOGUE, M.D.

Medical Director, Welfare Plan, Seafarers' International Union, Brooklyn, New York

Today I am here to speak to you about the physical examination program for seamen which is carried on by the Seafarers' International Union and its contracted shipping companies.

To begin with, I might point out that the health of seamen has long been a matter of prime concern to the Seafarers' International Union, since union officials have known for many years that a healthy seaman is not only a safer seaman but a more efficient seaman and a better business risk, both from the standpoint of the company which

employs him and from the standpoint of the union, which is under a contractual obligation to provide able and ready seamen to its companies and to see to it that the ships of these companies are properly manned and experience no sailing delays.

Because of this concern for its members' health, and because it was felt by both union and shipping company officials that the physical examinations then being given to seamen were inadequate, President Paul Hall of the SIU, some years ago, began to champion the idea of having diagnostic clin-

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ics established in the vicinity of each union hall where seamen could obtain complete and comprehensive examinations.

Eventually, an agreement was negotiated between the union and its contracted shipping companies to establish such clinics through the Seafarers' Welfare Plan, and in April of 1957 the first of these clinics was opened in Brooklyn, adjacent to SIU headquarters.

Since that time, clinics have been established in every SIU shipping port on the Atlantic and Gulf coasts, while on the west coast our affiliated union has established clinics in four ports where they examine our seamen while we, through a reciprocal arrangement, examine theirs.

We also have two clinics in Puerto Rico, as well as clinics in all shipping ports on the Great Lakes—the newest of these being in Chicago at 1301 South Michigan Avenue.

In toto, we now have 23 clinics in operation and we have also, since the first clinic was opened, expanded the scope of our services so that we now provide diagnostic examinations for the dependents of seafarers, as well as seafarers themselves, and also have a blood bank which makes blood available for members or their dependents in any hospital in the United States or Puerto Rico.

The examinations at these clinics include a complete history, laboratory examination (urinalysis, hemoglobin, routine serology and other blood work as required): chest X-ray, electrocardiograph, and a complete physical by a competent doctor. The findings are summarized, and a card given the seaman noting when he was examined and when he is to return. This card must be valid before a man can register for shipping.

If treatment is necessary, the seaman is referred to the Public Health Service, and must procure a fit-for-duty letter before he can ship.

For the dependents and others, we have a comprehensive insurance plan (medical & surgical benefit) under which they may be treated at any hospital facility of their choice.

Since the opening of our first clinic in April, 1957 to April, 1966, we have examined the following number of personnel.

1. Seamen—80,676

2. U.I.W. and other affiliates—2,516

3. Dependents: Women—8,200
Children—6,544

What are the advantages of these clinics?

It is generally accepted that an annual physical examination, thoroughly done, is one of the most important steps in preventive medicine and safety for the person's health and welfare.

The armed forces have had this type of examination for the past 40 years.

Most big organizations provide their personnel with these facilities and, more and more, everyone has become aware of the necessity for such examinations. This is necessary if disease conditions are to be discovered in their incipency, when proper treatment or correction can be done before the disease has progressed beyond the aid of modern medicine and surgery.

What diseases or conditions are found on these examinations?

We have found practically all the conditions and diseases one is subject to.

However, there are great areas that are especially important from the standpoint of regular periodic examinations.

Early detection of cancer, wherever it might be.

Drs. Fred C. Collier and Edmund A. Dowling in the study of breast cancer, state that early detection is certainly the most important factor in the prognosis. This is true of any cancer.

In this regard, we plan to add mammography (a new method of X-ray study of the breast for cancer) to our armamentarium in detecting breast cancer. We routinely use Pap smears in the early detection of uterine cancer. The alarming increase in cancer of lungs makes it inherent for everyone to have a chest X-ray at least once a year.

We are continually finding early cases of lung cancer by periodic chest X-ray, where it would be impossible to discover by any other method. After symptoms develop in most cases of cancer, it is usually too late for life saving treatment.

Tuberculosis is another area where early diagnosis not only saves the patient from prolonged treatment, if not, loss of life itself. Early detection also serves to prevent

him from spreading the disease to his family, shipmates and others. It is also essential that these cases be followed for indefinite periods to guard against a relapse or recurrence.

All luetics are continually given follow-up observation and/or treatment, until such time that there is no question as to their adequate care.

The most prevalent conditions in which we are able to accomplish preventive and palliative medicine are in those cases of overweight, hypertension, and diabetic cases, all of which are frequently associated. These cases are advised as to regime to follow, and if medical treatment is required, they are referred to the Public Health Service hospital or, in the case of dependents, they are referred to their local doctor.

Some of the individual cases might be of interest to you.

One of our early cases was a young man who on routine examination by the doctor was found to have a small pea size area on his right testicle. He was advised to go to the Public Health Service for study. He showed umbrage that anything could be wrong with a young, virile man such as he. We however, insisted on a biopsy. The tumor was found to be malignant, and an extensive operation was performed. The Public Health Service hospital told him that he was very fortunate to have such a thorough physical examination. He is now, 6 years later, well and one of our best boosters.

We have had many cases of cancer of the prostate discovered due to our routine examination, and conscientious insistence that any abnormal variation be thoroughly investigated.

We recently examined a middle-aged man for shipping whose examination revealed a large, walnut size type of tumor in his upper lungs. He was referred to a good chest surgeon at Memorial hospital, who concurred with us that it was probably cancer, and required immediate surgery. After the operation, the surgeon called me and said that the pathological report showed cryptococcosis. I told him that I was not familiar with this condition. He stated that he was not either, but he checked the literature, and there had only been a few cases re-

ported, and that the prognosis was grave. However, they had a new drug that they would try, but it was extremely toxic. The man is living after 2 years. Cryptococcus is a fungus type infection that is contacted through pigeon droppings.

For children examinations, we have pediatric specialists. We find, other than routine cases, various types of congenital deformities which, under proper care are correctible, such as club feet, eye muscle imbalance (cross eyes) and others.

We had one boy who complained of pain in his hip. Upon examination, we discovered he had a hip condition known as Legg-Calve-Perthes disease, which without proper care leads to severe deformity, if not an ankylosed hip. The boy today is a 6-foot young man with no discernible limp and no pain. Included in these examinations, we see that the children receive proper inoculations such as diphtheria, polio, tetanus, etc.

We have Gynecologists to examine the women dependents, and screen each especially for cervical cancer with Pap smears, as well as other routine tests. We are constantly finding pathology of one type or another.

Just a few weeks ago, we had a woman dependent who had an inflammatory lesion of the outer breast which proved to be tubercular. Just one of the unusual cases.

In conclusion, I wish to emphasize that a "well man is a safe man," well, not only physically, but free from worry about his family left behind.

A person who is sick, or in poor health is well known to be accident prone. This is due to lack of physical vigor, or agility to cope with ordinary emergencies that a well man would readily react to safety as he is more prone to be thinking about his own condition to give his full attention to the job he is endeavoring to accomplish, in other words, his work.

We also feel very strongly in regard to the dependents' health program. With this program, a man can go to sea without worry with a feeling of well being that while he is away, his family is adequately cared for in case of illness and, thus, *he is a better and safer seaman.*

HAZARDOUS CONDITIONS AND PRECAUTIONARY MEASURES WHEN WORKING WITH EPOXY RESINS AND SOLVENTS

By CHARLES W. WYMAN

Senior Staff Engineer, Industrial Hygiene and Safety Engineering,
Western Electric Co., Inc., Hawthorne Works, Chicago

Epoxy resin systems are composed of two or more reactive components: uncured resin, and a curing agent generally referred to as the "hardener."

Uncured liquid resins have a consistency of heavy syrup and in this form have limited use; however, when mixed with a hardener, a chemical reaction takes place which converts it to a hard, mechanically strong material with excellent adhesion, cohesion, chemical, and electrical resistance properties. Other additives to the mix may include liquids or solids to produce desired physical properties.

Epoxy resin applications include potting of electrical components, re-inforced plastic and metal laminates, foundry patterns, forming tools and dies, adhesives for metal and plastic bonding, appliance finishes, floor and surface coatings.

Let us look at the hazards problems.

In the December, 1959, issue of the American Medical Association's *Archives of Industrial Health*, the following statement was made: "Epoxy resins are causing more occupational dermatitis than any other new chemical material within the past 10 years!"

The first users of epoxy resins did not appreciate the delayed irritating effect resins and hardeners could have on the skin. Workers got the material on their hands and arms during mixing, pouring, and spreading operations. Since the irritant has a delayed rather than an immediate effect on most people, a few days to several weeks elapsed before severe cases of skin irritation developed.

Recent developments of new hardening agents of low toxicity and minimum irritant potential have somewhat reduced the dermatitis hazard. However, the use of these new hardeners does not eliminate the need for following prescribed precautions to avoid contact with the material. Good housekeep-

ing, personal cleanliness, and ventilation are still essential.

Basic resins, reactive curing agents, reactive diluents, and modifiers are mild to strong primary skin irritants, and some have sensitizing properties.

The volatile materials given off during compounding, handling, and curing operations can cause irritation of the eyes, upper respiratory tract, and lungs if the concentration of the vapors is excessive. No systemic intoxication of any significance has been associated with exposure to epoxy resins.

Contact dermatitis is the common type of skin irritation produced by epoxy resins. The irritation appears at the point of contact and may vary from slight reddening with mild itching to a rash or small eruptions with intense itching. In severe cases there may be open or weeping sores with or without swelling.

If an employee contracting a mild case of contact dermatitis is removed from the exposure and receives the necessary medical care, the irritation will usually clear up in a few days and the employee may return to the job without ill effects; that is, if he is careful to avoid further contact with the irritant. In severe cases the employee may become temporarily disabled and may or may not be returned to the job.

Sensitization dermatitis is the less common type of dermatitis. The term is used to describe an allergic type of reaction from a sensitizing agent. The sensitizing agent may not affect the individual on first contact, but after continued exposure for an extended period a dermatitis suddenly develops. After sensitization occurs, the slightest exposure to the sensitizing agent may precipitate a severe reaction. Irritation may spread from the point of contact to other parts of the body and be accompanied by swelling and other systemic reactions.

Once sensitized, the skin tolerance is so reduced that the individual develops dermatitis from much lower concentrations than would have affected him before sensitization.

Sensitization dermatitis is generally considered to be the most serious of the two types. Sensitized individuals can seldom return to work with the sensitizing agent, and may be more susceptible to other irritants.

Exposure Causing Dermatitis.

The most severe exposure comes from direct contact with the hardener and with the uncured resin-hardener mix. Exposure can result from contact with the volatile materials which are given off during the compounding, handling, and curing of these resins. The volatile materials given off during oven curing can be very irritating.

Cured resins are not always inert. If an excess of hardener is used or if the curing action is incomplete, there may be appreciable unreacted hardener left in the finished part.

Dust from finishing operations such as grinding, filing, sanding, *etc.* on such parts may contain sufficient uncombined hardener to irritate the skin of some individuals.

It is obvious that the best way to control epoxy dermatitis is to prevent skin contact with the hardener and uncured resins. No contact — no dermatitis!

Fillers.

Fillers used in epoxy mixes can also present problems. Asbestos, mica, silica, flour, and fiber glass, if inhaled, can cause irritation of the respiratory passages. Silica and asbestos are recognized toxic dusts having harmful effects on lung tissues. Local exhaust ventilation may be necessary if operations require extended exposure. For exposures of short duration a dust type respirator will provide the needed protection.

Fiber glass tends to fragment into small spicules; these may be caught in the ridges and folds of the skin. If they work their way into the skin they produce severe itching and sometimes foreign body reactions. Secondary infections may result from rubbing or scratching the affected area.

Grinding, filing, sanding, drilling, and similar operations on resins using these fillers can also produce dusts that can cause mechanical skin irritation. Washing the hands

and arms frequently with "scrubber" type granular soap to remove these particles before they work their way into the skin has been found to be a good protective measure.

Experience has shown that the incidence of dermatitis from epoxy resins can be satisfactorily controlled by:

1. Good engineering
2. Education of supervisor and worker
3. Good housekeeping
4. Protective clothing
5. Job placement and medical service

Good Engineering.

Select hardeners, modifiers, and fillers having the least irritating and toxic effect.

Arrange epoxy operations to minimize traffic through the work area.

Provide adequate exhaust hoods for compounding, mixing, dipping, laminating, curing, *etc.*, where large quantities or continuous operations are involved.

Provide properly ventilated ovens exhausted outside the building when curing is done at elevated temperatures.

Provide well ventilated areas for curing at room temperature.

Provide hand washing facilities in close proximity to work area.

Employee Education.

The irritating and toxic effects of the resin and hardener should be explained to the employee. The necessity of keeping the hardener and uncured resin from the skin must be stressed.

Handling procedures should be established and demonstrated showing how direct contact can be avoided.

Employees should be cautioned to avoid careless handling that will result in the contamination of tools, fixtures, equipment, and work surfaces by hardeners or uncured resins.

Personal protective equipment such as protective creams, rubber finger cots, rubber or cloth gloves, sleeves, aprons, face shields, safety glasses, *etc.*, must be worn and kept in good condition.

Good personal cleanliness is the best preventative measure for eliminating skin irritation. The hands should be washed with mild soap before and after work and before

going to the toilet. If hardening or liquid resin should contact the skin it should be wiped off and the affected area washed with soap and water immediately.

The use of solvents should be reduced to the absolute minimum. Suitable rubber gloves should be worn for all cleaning work in which solvents are used. The wearing of rubber gloves does not obviate the need for absolute cleanliness. Contaminated solvent should be disposed of at once in a suitable safety container. Contaminated solvent must not be used to clean tools or equipment.

Employees should be warned against touching their face or other skin areas with hands or gloves which may be contaminated.

Smoking or eating on the job should not be permitted, to eliminate the possibility of contaminating the face and lips with irritants.

Housekeeping.

Meticulous housekeeping standards should be established and enforced.

Bench tops, work surfaces and, in some instances, certain floor areas should be covered with disposable paper, changed at least each shift of operation.

An adequate supply of paper towels should be available so that small splashes or drips of hardener or uncured resin can be wiped up immediately. These should be disposed of in a special closed container specifically provided for this purpose. Similarly, paper cups used for mixing or holding resin should be disposed of as soon as empty to prevent contamination of the work area.

Protective Equipment and Clothing.

Personal protective equipment items and clothing must never be considered an adequate substitute for good engineering, good housekeeping, and a careful, informed worker. However, if used intelligently and maintained in good condition, personal protective equipment can be very effective in minimizing exposure to irritants and toxic vapors.

The personal protective equipment needed for safe operation will vary widely depending on the process and exposure. The need for such equipment should be determined by a careful study of the operation as well as a review of injury experience data.

Lanolin and silicon base protective creams applied to the hands and arms before start-

ing work provide some degree of protection against skin irritation. They leave an oily surface to which the resin will not firmly adhere and facilitate removal when washing with soap and water.

Plastic coated fabric and disposable paper sleeves have been found to give good arm protection against minor splashes and spills.

For light exposures such as potting or cementing of small electrical components where finger dexterity is essential, rubber finger cots or tight fitting fabric gloves may be adequate if reasonable skill and care is used. Fabric gloves should be removed and discarded just as soon as there is visual contamination of their outer surface. After removing the gloves, the employee should wash his hands and arms, re-apply protective cream, and put on new gloves before resuming work.

Hand mixing and dispensing of resins usually require the wearing of rubber gloves. Particular care must be taken in putting on and taking off gloves and sleeves to assure the irritant material is not transferred to their inner surface where it will be in direct contact with the skin.

Coated fabric or disposable paper aprons are generally provided, not only for body protection against occasional minor splashes or spills but also to prevent permanent damage to the employee's personal work clothing.

For operations such as laminating, casting, and surface coating where the nature of the work is such that an employee cannot avoid body contact with the uncured resin, suitable outer work garments are generally provided and maintained by the employer.

When a large volume of epoxy must be handled in poorly ventilated or confined areas, a chemical type respirator or air supplied breathing apparatus may be required to protect the worker from the inhalation of hazardous vapors.

Face and eye protection in the form of face shields or safety glasses may be required for compounding, mixing, and dispensing operations where pressure systems are used or where there is a splashing hazard. Hardeners and uncured resins are extremely damaging to the eye. If the eye is affected, it should be flushed promptly with plenty of water for at least 15 minutes and medical attention obtained for it at once.

Job Placement and Medical Service.

Employees should be screened before they are placed on epoxy resin work to exclude those who are known to have sensitivity or allergy to irritants as well as those who are prone to acne or eczema.

Whenever dermatitis develops due to epoxy resin exposure, the employee should be sent immediately to the nurse or plant physician with a note to indicate there has been exposure to epoxy resin. The decision regarding whether the employee should be placed on temporary or permanent restriction away from epoxy should be left to the physician.

To summarize, basic resins, reactive curing agents, diluents, and modifiers are mild to strong summary skin irritants. Some have sensitizing properties.

Volatile materials given off during compounding, handling, and curing operations irritate the eyes, nasal passage and lungs, if excessive.

Certain fillers used in epoxy mixers are skin irritants and may have harmful effects on the lungs if the exposure is excessive.

Experience has shown that the incidence of dermatitis and systematic injury can be satisfactorily controlled through (1) good engineering, (2) education of the supervisor and worker, (3) good housekeeping, (4) protective equipment and clothing, and (5) job placement and medical service.

Hazards Associated With the Use of Organic Solvents.

Twenty-five years ago there were only a few dozen organic solvents commonly used in industry.

Today, hundreds of different solvents and solvent blends are in use not only in industrial plants but in commercial establishments, laboratories, offices, and the home. Typical applications include degreasing metal parts; extraction of fats, oils, and waxes; dry cleaning; formulation of paints, varnishes, and lacquers; paint removers; adhesives, and manufacture of synthetic fabrics, insecticides and cosmetics.

The use of organic solvents presents three potential hazards:

- 1) *Health*
- 2) *Skin Irritation (Dermatitis)*
- 3) *Fire and Explosion*

Health Hazards.

The extent of the health hazard depends on several factors: relative toxicity of the material, how it is to be used, how the worker is exposed and vapor concentration.

Toxicity refers to the harmful systemic effects resulting from the inhalation of vapors or from absorption through the skin. These include effects on the upper respiratory passages, lungs, and the nervous and digestive systems.

All organic solvents are potentially injurious to the health of workers unless used with proper and adequate controls.

"Threshold limit values" recommended by the American Conference of Governmental Industrial Hygienists are the generally accepted guide to toxicity. The threshold limit value for a particular solvent indicates the maximum vapor in air concentration to which most workers can be repeatedly exposed day after day without ill effects.

Following are threshold limits for some commonly used solvents:

<i>Solvent</i>	<i>Parts Per Million</i>
Acetone-Ethyl alcohol	1000
Petroleum naphtha-Stoddard Solvent	500
Methyl chloroform	350
Coal tar naphtha-Methyl alcohol-Toluene	200
Trichlorethylene-Perchloroethylene-Turpentine	100
Carbon disulfide	20
Carbon tetrachloride	10

Since threshold limit values may be based on various effects including discomfort, respiratory irritation, narcosis, as well as acute poisoning, they should not be used for a direct comparison of toxicity.

Short exposure to some solvent vapors can produce eye and respiratory irritation, drowsiness, dizziness, nausea, headache, and lack of muscular coordination, but cause no lasting and harmful systemic effects.

Others, such as carbon tetrachloride and benzol, may seriously affect or damage the blood, lungs, liver, kidneys, and gastro-intestinal tract and may cause permanent damage.

Acute solvent poisoning results from breathing high concentrations of solvent vapors for a short period of time. Such exposures may result from accidental spil-

lage, overflow of tanks, or cleaning operations in confined, poorly ventilated areas of tanks.

Chronic poisoning results from repeated daily exposure over an extended period.

To evaluate the health hazard from solvent exposure one must know: composition and toxicity of the solvent, vapor concentration in the work area, and duration of employee exposure.

Instruments and analytical methods are available for sampling the air and determining the vapor concentration. Such determinations can best be made by an industrial hygienist or a qualified chemist.

The results of such determinations can be compared with the recommended threshold limit values for the solvent in question. If the vapor concentration in the work area exceeds the recommended value corrective action is indicated.

Corrective action necessary to assure safe operation might include: a change to a solvent of lower toxicity, a suitable enclosure and local exhaust, better general room ventilation, or providing employee with approved respirator or air-supplied mask.

The chlorinated solvents — methyl chloroform, trichlorethylene, perchlorethylene and carbon tetrachloride—because of their non-flammable and high solvent properties, have been used for some time in industry.

It is obvious that carbon tetrachloride, because of its very low (10 parts per million) threshold limit value and accumulative harmful effects on the body, should only be used with adequate exhaust ventilation and carefully controlled handling procedures.

Trichlorethylene, with a threshold limit of 100 parts per million, is being used extensively in vapor degreasers for cleaning metal parts. These machines, if properly designed, operated, and maintained, do an excellent job with little solvent vapor hazard. However, if improperly operated and maintained they can quickly release large amounts of trichlorethylene vapors in the work area and present a serious health hazard. The vapors have a narcotic effect similar to chloroform and in high concentrations can cause serious injury and death.

Leaking pumps or valves, failure of the water supply to the cooling coils, overloading, or too fast a cleaning cycle, cleaning

cup shaped parts or parts with blind holes, tightly packed parts which prevent good drainage are a few of the conditions which can liberate harmful solvent vapor concentrations in the work area.

It is essential that the parts be dry when they come out of the degreasers.

Trichlorethylene vapors in the presence of an open flame break down into very toxic vapors. Welding and similar torch operations should not be performed in close proximity to vapor degreasers.

Under no circumstances should an employee be allowed to enter a degreaser that has not been drained, cooled, sludge removed, and then aerated. An employee working inside such a degreaser should always be under constant observation by another person on the outside.

The use of trichlorethylene for removing oils or waxes from floors, benches, *etc.*, should not be condoned.

Methyl chloroform, with a threshold limit of 300 parts per million, can generally be used safely for occasional and intermittent small cleaning operations provided the work is done in well ventilated areas.

Repeated or prolonged exposure may result in mild irritation from its defatting action on the skin. Solvent resistant gloves should be provided.

Dermatitis.

Solvents cause contact dermatitis because they dissolve and remove the natural oils and fat needed to keep the outer layer of skin soft, flexible, and healthy.

With continued exposure to fat solvents, the skin becomes dry and scaly. Cracks and fissures develop which allow the solvent to penetrate and irritate the sensitive underlying tissue.

Fire and Explosion Hazards.

Many solvents present a fire and explosion hazard. In dealing with this hazard one must keep in mind that it is the solvent vapor-air mixture that burns, not the liquid solvent!

Flash Point.

The relative fire hazard rating of a solvent is based on the solvent's *flash point*. The flash point is the lowest temperature at which vapor is given off in sufficient quantities to mix with air and catch fire from a

source of ignition. The lower the flash point, the greater the fire hazard.

We are concerned particularly with the hazards of solvents having flash points under 140°F. Those with flash points at or below 100°F are rated *extremely flammable* because flammable vapor-air mixtures can be present at most room temperatures. Typical are acetone, alcohol, petroleum naphtha, and turpentine.

Solvents with flash points above 100°F but below 140°F carry a flammable rating but do not form flammable vapor-air mixtures at ordinary room temperatures. They do form flammable vapor-air mixtures when heated to over 100°F. Kerosene, petroleum spirits, and Stoddard solvent fall in this group.

Explosive Limits.

When combustible vapor is mixed with air in proper proportions, ignition will cause an explosion.

For each flammable liquid there is both a minimum and maximum vapor in air concentration which propagate a flame and cause an explosion on contact with a source of ignition. The minimum concentration is known as the lower flammable or explosive limit and the maximum, the upper explosive limit. The upper and lower explosive limits for most solvents and solvent mixtures can be obtained from the supplier or insurance underwriters.

Test instruments known as "flammable vapor indicators" or explosimeters are available for checking vapor-air concentrations at the work place. These instruments are direct reading and the values contained are expressed as a percentage of the lower or upper flammable or explosive limit.

Toxicity Control Measures.

Education is one of the most important aspects of solvent exposure control. Supervisors must know the composition of the solvent, its toxicity, and precautions which must be taken to use it safely; this information must be passed on to the worker.

Toxicity data can be obtained from suppliers as well as from data sheets issued by the National Safety Council.

Proper labeling of all containers to meet Federal, state, and local requirements is essential. The label should include not only

the chemical or trade name of the solvent but also the nature of the health hazard, precautions to be observed, and, in the case of highly poisonous or toxic materials, first aid and emergency treatment.

Substitution of solvents with lower toxicity for a more hazardous one is always a possibility.

Enclosure of the process or equipment is one of the most effective means of minimizing the escape of solvent vapors into the workroom. When highly flammable or toxic solvents are involved, local exhaust ventilation may be required.

Local exhaust ventilation designed to remove solvent vapors at their source can be used to advantage for many operations as less exhaust capacity is required and result in low air handling and heating costs.

General room ventilation may be sufficient when comparatively small amounts of the less toxic solvents are vaporized. In general, ventilation sufficient to keep the vapor concentrations below the hazardous health level will automatically assure that the vapor concentration will be below the flammable or explosive limit.

Dermatitis Control Measures.

Personal protective equipment should be provided wherever it is impracticable to control exposure by other means. Goggles, face shields, respirators, solvent resistant gloves, sleeves, aprons, special shoes or clothing may provide the needed protection depending upon the exposure.

Set up operations involving solvents so as to minimize employee contact with liquid solvent and vapors.

Protective creams are of value in preventing solvents from removing natural oils of the skin. The protective cream selected should be resistant to the solvent being used.

Employees should be cautioned against washing their hands and arms in solvents. Waterless hand cleaners are generally quite effective in removing materials on which soap and water is ineffective.

Fire and Explosion Control Measures.

All solvent containers should be labeled to show contents, hazards, and precautions to be observed. Federal, state, and local labeling laws should be observed.

Highly flammable solvents should be transported and used in approved safety containers equipped with flash-back arrestors.

Dip and wash tanks should be equipped with fire screens or fusible link covers. Supply tanks and portable containers should be electrically connected and effectively grounded during filling operations. Use pumping systems rather than gravity flow for transferring solvents.

Arrange for safe and approved disposal of waste solvent. Solvents must not be dumped in to sewer or drainage systems; never in scrap or rubbish containers.

All sources of ignition should be eliminated from areas where flammables are stored or used. This should include open flames, static electricity, excessive heat, and sparks from electrical devices.

Good housekeeping is essential where solvents are stored, handled, and used. Spills should be cleaned up promptly by workers wearing necessary personal protective equipment. Solvent soaked rags or absorbent should be placed in closed metal containers and removed daily from the plant.

To summarize, the use of organic solvents present three potential hazards: health, skin irritation (dermatitis), and fire and explosion.

Acute or chronic systemic poisoning may result from breathing excessive vapors or from absorption through the skin.

Solvents cause contact dermatitis because they remove the natural oils from the skin and cause chemical irritation of the sensitive underlying tissues.

Flammable solvents present a potential fire and explosion hazard when used in close proximity to sources of ignition.

Potential health, dermatitis, and fire and explosion hazards can be controlled through:

1. *Educating* supervisors and workers so that they know the hazards associated with the handling and use of solvents, and the importance of following safe use procedures.
2. *Providing* safe equipment and processes with necessary enclosures and exhaust ventilation to assure safe operation.
3. *Supplying* the worker with any needed personal protective equipment or clothing to protect him from exposure to toxic vapors and minimize contact with the liquid solutions.

REFERENCES

For further information of the properties of solvents, health and fire hazards, evaluation and control of exposures:

Handbook of Organic Industrial Solvents, Technical Guide No. 6, National Association of Mutual Casualty Companies, 20 N. Wacker Drive, Chicago, Ill.

Hazardous Chemicals Data NFPA No. 49M, National Fire Protection Association, 6 Batterymarch, Boston, Mass.

Threshold Limit Values for 1966, American Conference of Governmental Industrial Hygienists, 1014 Broadway, Cincinnati, O.

National Safety Council Data Sheets, National Safety Council, 425 North Michigan Avenue, Chicago, Ill.

Flammable Liquid Trade Name Index, NFPA 325A, National Fire Protection Association, 60 Batterymarch Street, Boston, Mass.

THE MEDICAL DEPARTMENT'S RESPONSIBILITIES IN TREATING INJURIES OR DISEASES CAUSED BY EPOXY RESINS AND SOLVENTS

By M. B. VYHNAK, M.D.

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In treating injuries or diseases caused by epoxy resins and solvents, our approach is not to treat them but to prevent them as much as possible.

Charles Wyman outlined for you the dangers and the hazards involved in dealing with these offenders, and offenders they are. For this reason, it is very important to have the full cooperation of all those who have anything to do with these jobs. It must be a team effort.

The team includes: set-up engineer, product engineer, safety coordinator, industrial hygienist, and a well informed and cautious employee and line supervisor who does not tolerate any laxity or any short cuts, even when the production needs are pressing.

I have not yet mentioned a medical man; he is also important because he knows the human machine and its limitations in both good and ill health. The medical department's responsibility in prevention is to hire or to place on these jobs the right individual, after other members of the team have identified and brought under control the involved risks. As both the epoxy resins and the solvents are known to be trouble makers for the worker's skin, it is logical not to have on these jobs anyone whose skin disease or condition might be adversely affected by them.

Certain solvents are systemic poisons and might be rapidly fatal even to a healthy individual if massively absorbed. These same solvents might cause a slower but very serious damage to the liver and the kidney. For this reason, it is important not to consider for such job assignment anyone whose general resistance is lowered by a debilitating disease or whose liver or kidney functions are impaired.

It is not enough to establish fitness to work with solvents and not reevaluate it on a regular basis. We screen these employees

every three months by updating their medical history, by inquiring about their tolerance of the job, by taking their vital signs, by testing their urine for excretion of the metabolites of certain solvents, and by giving them a full evaluation if any abnormality is noted.

We also give them a full evaluation routinely, once a year, even if the screening is normal. This evaluation includes a complete physical examination and laboratory tests directed to the early discovery of impairment of the liver and the kidney functions.

The epoxy resins do not require a close medical supervision after establishing the initial fitness. The employee himself and his supervisor detect easily the signs and symptoms of irritation and thus the need for medical evaluation and eventual treatment. The irritation might involve the skin, the eyes, or the upper respiratory passages depending on the state of these resins (solid, liquid, pulverized, or vaporized). In case these resins are mixed or diluted with harmful solvents, the same periodic evaluation is indicated as with the solvents.

This, I would say, is the most important part of our job and our medical organization's contribution to a concerted team effort as required in these conditions.

With this team effort, the necessity for treatment was reduced very markedly. I would say it represents a strict minimum. For this reason, when we discussed the title of this paper, I suggested we consider the skin reactions only. However, the subject is presented in a wider scope and so I will review all necessary measures.

The injury sustained by the worker can be 1) poisoning, and 2) inflammation of the skin and mucosa.

Poisoning cannot be caused under industrial conditions by epoxy resins unless they are mixed or diluted in solvents. The sol-

vents are the only offenders. The most dangerous are trichlorethylenes and carbon tetrachlorides. Poisoning occurs through ingestion or absorption. Absorption in most cases is due to the inhalation of vapors or fumes and very seldom is it due to penetration through the skin.

Poisoning can be acute, through a single overwhelming exposure, or chronic through a sustained and, by the body, uncompensated exposure over a longer period of time. Acute poisoning has to be suspected any time a significant exposure is reported and in the presence of the signs and symptoms of a serious irritation of the central nervous system: drowsiness, dizziness, tremors, nervousness, paresthesias, delirium, or loss of consciousness.

The very serious signs need not develop immediately; they might appear even 24 hours after the exposure. As acute poisoning might be rapidly fatal through a circulatory or respiratory failure, hemorrhagic pulmonary edema, or shock and later through damage to the liver and kidney, it is urgent to act fast. First aid should include removal of the victim from the contaminated area, removal of contaminated clothing, and cleansing of the skin while artificial respiration and/or oxygen is administered, if necessary.

If the solvent was ingested, vomiting should be provoked if the patient is conscious. This should be followed by gastric lavage. Intravenous fluids should be started if available and the patient taken to the hospital for further treatment.

Chronic or milder cases of poisoning are usually characterized by a combination of central nervous system and digestive irritation: headache, nausea, vomiting, abdominal cramps or colic, diarrhea with or without blood.

Such a condition might be properly evaluated in a well equipped medical department and the patient does not necessarily need to be hospitalized. He should be removed temporarily from his job, given symptomatic treatment, and followed closely until his condition returns to normal, including the laboratory tests. We require that the tests be absolutely normal for at least two consecutive weeks before the patient is discharged from observation.

Injuries to the skin are frequently seen

with both the solvents and the epoxy resins. Although the treatment might be similar, there are, however, some differences deserving our consideration.

The worker reporting a dermatitis caused by solvents comes, usually, with very advanced lesions (completely dried out skin with scaling, fissures, infection) while the epoxy victim reports very early with complaint of itching, very often without any noticeable skin rash. The solvents, despite their sensitizing potential, are, most of the time, irritants only. The employee, for this reason, is practically always able to return to his job as soon as his condition is brought under the control. The epoxy resins are both irritants and sensitizers to the skin, and this almost equally. The sensitized skin will react violently even to a minimal exposure. Such an employee faces the loss of his job; his employer, a trained worker.

Dermatitis due to solvents is caused most of the time by unacceptable practices, and for this reason represents a serious break down in the operation for which both the employee and the employer are responsible. Some epoxy skin reactions can be explained by such a break down. But the serious, truly allergic cases are due to simple incompatibility between the product and its handler. Incompatibility might arise shortly after placement but might also develop after many years on such a job.

This incompatibility is much more frequent with epoxy resins than with the solvents. There is absolutely no reason to justify the direct contact of the skin with the solvents. Such contact can always be avoided, this cannot always be done with epoxy resins. Protective equipment can take care of most of the contact but not all of it.

Western Electric Company is a very progressive employer as far as safety and hygiene at work are concerned. We are, however, far from being perfect. The other day, despite all rules to avoid the direct contact of the skin with the solvents, we found, in a very prominent place in the shop, a large, bright red metallic container with a health-conscious label: "For Hands Only." It contained naphtha. I just wonder why the label did not include: "Do not contaminate with parts and tools."

Let us examine what the solvents and the epoxy resins can do to the skin. The

different kinds of damage will require a corresponding medical treatment.

Both can cause a contact dermatitis (which is a localized inflammation appearing on the areas which were directly in contact with the agent called irritant). Both can cause a truly allergic dermatitis based on sensitization and resulting in complete incompatibility between the host and the causative agent. Such dermatitis might cover the individual with hives all over the body, even though exposure was infinitesimal. Much more serious manifestations might arise, such as suffocation due to laryngeal edema or anaphylactic shock, a frequent cause of sudden death.

While the contact dermatitis might be clinically very advanced and require aggressive treatment, the worker usually can return to his normal job when recovered or as soon as his dermatitis is brought under control.

Very often, the new employees on these jobs are permanently removed from these assignments. This is not necessary; it is, in fact, wrong. In their cases, the contact dermatitis is usually the result of two factors; improper handling, and insufficient adaption of the skin to the product. Both will improve if given the chance. There are few people whose skin will not adversely react to the incompletely cured epoxy resins if sufficiently exposed. The new employees have to be temporarily restricted if contact dermatitis is serious, and permanently restricted if their skin becomes sensitized by the resins. In fact, mild contact dermatitis "hardens" the skin and will make it more resistant in the future.

If I had to describe the lesions of early epoxy contact dermatitis, I would say they resemble superficial burns in their redness but give an itching instead of a burning sensation. The more advanced stages give the appearance of a typical eczema, weeping or dry, acute or chronic.

It is a different story with contact dermatitis caused by the solvents:

1. They dissolve the keratin layer of the skin and attack the prickle cells, causing redness and blister formation.
2. They remove sebaceous and fat content of deeper layers as well as the outside lubrication of the skin called acid mantle. With

this, the skin becomes dry and scaling, loses its pliability, and finally cracks up forming more or less deep fissures.

3. Such dry skin with fissures gets very easily infected because the skin is always exposed to germs which cannot do their job as long as the skin remains intact.

Before thinking about therapy, we should think how to make it unnecessary. Cleanliness and good maintenance care of the skin and especially of the exposed areas (hands and forearms) is the first step. By maintenance care is meant the replacement of natural oils of the skin removed by drying agents be it extrinsic (water, soap, detergents, other chemicals) or intrinsic (age, disease). With age, the skin changes. This ageing of the skin is speeded up if the skin is allowed to dry out through external factors.

For this reason, we should all give some attention to our hands before bed time in addition to water and soap; hand cream applied at this time will not be washed off during our sleeping hours and will sufficiently penetrate and recondition the skin for the next day.

The treatment of contact dermatitis is essentially the same in principle, regardless of the causing agent, and is chosen according to the stage of dermatitis.

A mild case of contact dermatitis caused by solvents and characterized by simple dryness with superficial scaling needs simple precautionary measures, as outlined by *Industrial Hygienist*, and more frequent use of heavier hand creams.

A mild case of epoxy dermatitis with erythema and/or itching does not need necessarily any treatment; just competent follow up observation to prevent it from progressing into a more advanced form. We mentioned sooner the "hardening" or adaptation period of the skin of the new employees on the job. By not treating them, we might help this individual in the future because he might not respond by the same reaction to similar stress.

The acutely inflamed skin with weeping eczema and blister formation needs first a soothing effect of cold, wet compresses prepared in a solution 1:100 of aluminum acetate or boric acid or 1:4000 of potassium permanganate, especially if infection is pres-

ent. Wet compresses should not be applied for a long duration as they can cause maceration of the skin (15-30 minutes, four times a day, is usually sufficient). Large vesicles containing fluid should be opened and drained but not removed as their wall serves as an excellent natural dressing for the underlying skin layers.

In between the application of these wet compresses corticosteroid lotions should be applied. Lotions mix with secretions, and for this reason reach the injured skin. (Ointments, with their fatty base, remain separated from the skin by the interposition of these secretions).

Dry lesions respond relatively well to ointments containing boric acid, zinc oxide, or calamine. They usually respond much better to the cortisone ointments. The dryness of these lesions is at the same time better treated by the fatty base of ointments.

Most cases of contact dermatitis do not need to be treated internally; local treatment is usually sufficient. The itching might be very bothersome for some people. Antihistaminics by mouth seem to give good relief to these patients, and very often accelerate recovery. For this reason, they might be indicated in the early phase.

With this treatment contact dermatitis improves rather rapidly, provided the cause of irritation was removed. For this reason, it is very important, in any more serious case of contact dermatitis, to remove the employee from any environment where he could be exposed to the irritating agent. The frankly serious cases should not be allowed to work at all, and cautioned to stay away from any possible irritation to the skin.

This includes the use of soaps, detergents, etc., at home.

It is rare that under such management, contact dermatitis would not clear promptly. Should this happen, a search for a not completely eliminated contact with irritating agent or agents should be considered. Should improvement be slow, corticosteroids given by mouth might be of great help.

In case of superimposed infection, antibiotics by mouth or injection should be given. The choice of antibiotic should be made by identification of the germs and their sensitivities to the drug.

The final chapter of dermatitis caused by solvents and epoxy resins is the truly allergic type with generalized, systemic reaction as the most serious form of injury. The treatment is:

1. Absolute removal of the patient from the causing agent and its environment.
2. Medication by mouth as outlined for contact dermatitis; however, the antihistaminics should be at least given if corticosteroids are not urgent.
3. Local treatment might or, more often might not, be needed.
4. Such an employee should not in the future be exposed to the causing agent unless the desensitization was successfully completed. As the desensitization is always very difficult to carry out and relatively seldom is successful (specialists in allergy might not agree with me), I prefer to place a permanent restriction on such an employee and have him transferred to another job. I would be for the desensitization attempt if the well being of the employee and/or his family were in jeopardy.

JOINT SESSION WITH CIVIC LEADERSHIP, FARM, HOME, RELIGIOUS, WOMEN'S AND YOUTH CONFERENCES

THE HAZARDS OF GLASS: A DEMONSTRATION

By M. N. ZEOLLA

Residential Marketing Dept., Pittsburgh Plate Glass Co., Pittsburgh, Pa.

I want to comment briefly on the title given to my presentation, "The Hazards of Glass."

This title must create in your minds a frightful picture of glass. If this is so, then I want to add a few lines to that picture, some color, and some curves, so that it now takes on a new look and presents glass in a truer perspective.

The problems we sometimes encounter with glass (as with many other useful products) are the results of either improper selection, application, or treatment. Glass must be classed as one of the most important of building materials developed by man, if for no other reason than it satisfies one of man's most important needs, that of communicating with the outdoors.

The development of glass made it practical for man to move out of the caves and, with continuing developments, it now permits us to live and work in the modern shelters of wood, masonry, and metal providing the protected communication with the outdoors that is essential to our physical and mental well-being.

The flat glass industry has been constantly at work with developing new glass products to satisfy the ever-increasing needs which make living in our own homes safer, more pleasant, and comfortable.

A myriad of glasses and glass products are available today to provide the needed benefits. For example, a variety of tinted glasses to provide a wide range of glarefree vision through sunlit windows; insulated glass to help keep our homes cooler in summer and warmer in winter; reflective glass to reduce passage of unwanted solar radiation through our windows; stronger and safer glass.

Because of our interest today in safety with glass in our homes, let's concern ourselves with the glass that is used in today's homes; specifically, that in sliding patio-

doors, storm doors, tub enclosures, and shower doors.

This demonstration will show the various types of glasses available for use in residential construction, what happens when they are subjected to impact (especially impact from humans), and then permit you, through a better understanding of the properties and behaviour of these glasses, to better select and demand the glass or glass products best suited for the use.

Glasses available today possess visual characteristics so good that the glass, for all practical purposes, is invisible. However, because of the apparent invisibility of the glass in sliding doors, storm doors, and other types of glass doors, people (especially children) in moments of preoccupation, not seeing the glass, are likely to run into it. (Throws dummy into glass door for demonstration.)

This is the problem we were confronted with. I say *were* because the glass industry accepted this as a challenge and an opportunity to develop the solution. A solution has been developed. After hearing and seeing what we present today, you will be of the same opinion.

Having the solution to the problem is only part of the total answer, however. Unless you demand that the solution be used, the problem will continue to remain unsolved.

The most common glasses with which we are familiar are plate glass and sheet glass. The latter is quite often called window glass or crystal. Both plate glass and sheet glass are forms of what we in the glass industry refer to as annealed glass. The term "annealed glass" indicates that the glass, during manufacture, has been given a stress-relieving treatment. This is a slow-cooling process that anneals the glass, removes the residual stresses, so that we can cut it, grind it, seam it, and fabricate it.

Annealed glass is also available in wire

glass form or as laminated glass. Wire glass is annealed glass made with a wire screen imbedded within the body of the glass. This glass is developed primarily for use as vision panels in fire doors, so that, if the glass were to break in the fire, the glass fragments would be retained by the wire screen and prevent the spread of the fire.

In laminated form, the annealed glass is a sandwich of two pieces of either plate glass or window glass, bonded to each other by a resilient inner layer. A sheet of resilient plastic is sandwiched between two lengths of glass. Under heat and pressure the plastic flows, adheres itself to the glass surfaces, and gives us the form of annealed glass called "laminated glass. When the glass is broken this resilient inner layer, because of adhesion to the glass surfaces, retains the broken fragments and prevents the fragments from being scattered.

If we take regular annealed glass — window glass, plate glass, or any of the other glasses — and subject them to a special heat treatment which heats the glass to the softening point, then quickly chills it, we end up with a glass called "tempered" glass. This strengthening is accomplished, as I said, by reheating and rapidly cooling the glass. The heating and cooling are controlled so that we develop into the glass controlled compression stresses — compression forces — which make the glass strong.

This is ordinary annealed glass. (Demonstrates). When we bend this annealed glass right here — we end up with that red section up there indicating tension stress. When we reach a certain stress on that surface, the glass breaks. It never breaks on the bottom surface because it is in compression. *Glass never breaks in compression.*

Tempered glass, on the other hand, because of the heating and rapid cooling, puts compression forces on the surface so that the entire surface of the glass is encapsulated in compression forces which resist breakage. So, when we bend this piece of glass, we must first overcome this compression. When we bend it to same amount that we bend ordinary glass, we have no stress; it's "zero stress." We have to go beyond that to break it.

The glasses we have just described — wire glass, laminated glass, and tempered

glass — have been classified as "safety" glasses.

Because of our concern with glass as related to safety in the home, we are at the moment interested in glass strength as related principally to impact. What can be done to obtain greater impact resistance with glass?

If increased resistance to impact is desired, strictly from a glass standpoint, we can do two things. We can use thicker or smaller lengths of glass and, as we get thicker or smaller, we get stronger. If we don't want to do that we have another choice: to use basically stronger tempered glass.

If minimizing personal injury is the primary objective, the choice must be one of the three types of safety glass: wire glass, laminated glass, or tempered glass. (He demonstrated by comparing the impact resistance and the break patterns of the various glasses he had described above, beginning with $\frac{1}{8}$ inch annealed sheet glass.)

We refer to the type of break pattern exhibited by tempered glass as a "break-safe" pattern.

A test developed at Pittsburgh Plate Glass Company to evaluate the impact-resistance of glass used in buildings, both residential and commercial, involves impacting glass with 25 pound dummy, 5 inches in diameter and 25 inches long. (Demonstrates.)

Dropping that 25-lb. weight from a height of 14 feet is equivalent to a man impacting that glass at a speed of $20\frac{1}{2}$ miles per hour. This is the speed a man must run to make the 100-yard dash in 10 seconds. If a young boy of 100 pounds were to travel at five miles an hour (which is not running very fast), it would be equivalent to dropping that weight from a height of three- and one-half feet, which is a half-foot more than the average required to break ordinary $\frac{1}{8}$ inch thick annealed glass.

Glass commonly used in storm doors is of the annealed type, about $\frac{1}{8}$ -inch in thickness. In most cases, glass is used much thinner than $\frac{1}{8}$ -inch. In this application, such glass thicknesses are used in the interest of both weight and cost. The impact resistance of this glass is relatively low. (Puts a piece of $\frac{1}{8}$ -inch annealed glass in the demonstrator to show the relatively low impact resistance of $\frac{1}{8}$ -inch annealed glass).

The next test involves impacting tempered

glass with a 100-lb. weight in the shape of a punching bag. (Demonstrates.)

With the greatly increased strength and the "breaksafe" pattern of tempered glass, the safety needed is available at a reasonable and practical cost. The slight additional cost to have this glass instead of regular annealed glass is extremely low, and it is extremely low insurance for the safety it provides us and our families.

Just recently, the Architectural Aluminum Manufacturers Association took action to require safety glass in all its sliding doors.

Storm door manufacturers are beginning to use tempered glass in some of their doors.

However, success in these actions cannot be accomplished by the manufacturers alone. You, the consumer, are a most important factor. The glass industry has provided a practical solution to the problem. The door manufacturers want to make use of the solution. For these efforts in the interest of your safety to be effective, you must participate and demand the use of safety glass in all doors.

Ask for it, and then enjoy the best products for modern living in safety.

GLASS INJURY CONTROL

By WILLIAM V. WHITE

Chief, Liaison Services, Div. of Accident Prevention,
Public Health Service, Dept. of Health, Education and Welfare

Glass doors and panels have helped to bring the new pattern of outdoor-indoor living to the millions of people living in rural, urban, and suburban homes built since World War II. For the last three years, thousands of man-hours have been consumed in the interest of protecting the consumer from disability or death as he, with increasing frequency, demanded the new architectural designs and materials that opened the walls of his home to the beauties of panoramic living.

We believe in this extensive use of patio doors, tub enclosures, storm doors, and glass panels. We believe, just as strongly, that these doors and panels can be better and safer, and that the consumer can be informed as to their proper use.

The Division of Accident Prevention of the Public Health Service, the National Safety Council, and allied groups are justly concerned with the increasing frequency of disabling accidental injuries and deaths caused by persons walking through large glass doors or fixed glass panels. Falls through these large glass areas result primarily in serious and sometimes fatal cutting and piercing injuries. Severe lacerations of the elbow, arm, wrist, and hand are most common. Disfiguring cuts are not unusual. Reports from some surgeons indicate that when the victim is moving rapidly at the time of impact with ordinary glass, the patient is

more likely to be impaled under the arms or in the groin. In a few cases this has resulted in severing the brachial or femoral arteries, thus causing severe and almost uncontrollable hemorrhage. Time between the initial cut and death was less than 22 minutes in several cases recently reported.

One of these cases, recently, involved a 27-year-old mother of two small children who bled to death after she tripped and fell through glass in a door at a restaurant in a small southern town. The accident occurred at approximately 1:20 p.m. and she was pronounced dead at the county hospital at 1:40 p.m. According to the coroner's report, "the cause of death was hemorrhage due to lacerations of the right arm and a severed brachial artery."

We receive more reports of *non-fatal* accidental injuries than we do of fatal cases. Perhaps the one receiving widespread publicity involving singer Kate Smith is a good example. In this case, Miss Smith slipped in the bathroom and fell into the glass tub enclosure while visiting in a private home. Her elbow struck the annealed glass, causing it to break. Severe lacerations requiring more than three hours of surgery and six months of rehabilitation were sustained in this accident. Ironically, all glass patio-doors in this house had tempered safety glass in them. The owner had forgotten to replace

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the dangerous glass with the swan design around the tub.

Since non-fatal accidental injuries are not routinely reported to health departments or any other agency, we do not know the full extent of the problem. In 1960, however, a west coast medical journal reported 40,000 insurance claims per year by victims of glass door injuries. This figure was never substantiated. It soon became apparent, however, that a serious new injury problem has been identified.

When a new or obscure disease is identified in the community as a cause of severe disability or death the health resources of the nation are mobilized to protect the American public. Sometimes overlooked is the fact that a patient disabled by an accidental injury is just as sick as the patient disabled by disease. He occupies a hospital bed, requires skilled medical and nursing care, laboratory and X-ray service. He is frequently referred to the rehabilitation center for lengthy periods of therapy designed to restore him to health and enabling him to resume his role as a contributing member of our society.

Sometimes a specific disease receives the spotlight for a dramatic "program for prevention." For example, consider the recent polio immunization programs — successful community efforts to reduce the incidence of the disease. Although only 20 deaths were reported from polio in 1965, the concerned application of our total health resources on *one disease* was justified because polio is preventable.

Disabling, cutting, and piercing injuries from glass doors are equally preventable. It is almost ironic to observe that there were more deaths from glass injuries last year than there were from poliomyelitis. We have no vaccine to drop on a cube of sugar. We do have a modification of the environment which will substitute safer glass for injury-producing glass in critical locations, and an information program for the consumer and distributor.

The success of our vaccine may never be recorded in public health history, but it will be recorded in the living image of potential victims who were saved from disability by the efforts of a concerned group of ethical manufacturers, safety council representatives, and public health workers.

A national study group on glass injuries, composed of representatives from the Public Health Service, Division of Accident Prevention, the National Safety Council, door manufacturers and glass manufacturers, code officials and other concerned groups has nearly completed the Herculean task of defining the problem and finding a solution.

A pilot survey conducted by the Dade County, Florida, Health Department gave us leads to identify the independent variables associated with glass door injuries. In this pilot survey, glass dealers reported orders they received for replacing glass panels of the size normally used in sliding glass patio doors. The name and address of the person ordering the replacement were sent to the Dade County Health Department. Health workers recently had been trained to investigate each case and see if human injury was involved. When human injury resulted, vital information was obtained regarding the action of the individual at the time of the injury, the type of door and glass involved, the physical condition of the patient at the time the injury was received, and other pertinent facts.

This technique was refined during the pilot survey. A special questionnaire was completed and a more representative sampling procedure was applied to 16 communities where shoe leather epidemiology was initiated by more than 400 local health department workers.

The expanded survey involved a detailed recording of the circumstances surrounding 110 glass door injuries from 725 follow-up investigations. Major points learned from the survey included:

Health departments in 16 cities conducted surveys—Hartford; Peoria; Wichita; Tucson; San Jose; Contra Costa; Orange County, California; Memphis; Portland; Little Rock; St. Louis; Prince Georges; Baltimore; Washington, D.C.; and Orange and Dade Counties in Florida.

Eighty per cent of all the injuries occurred to persons between ages five to 44 years, with age groups five to 14 accounting for one-third of all injuries.

Sixty-eight per cent of accidental injuries occurred to males.

One out of seven accidental injuries required hospitalization.

Going from inside to outside of building

accounts for over 74 per cent of accidental injuries.

Over 74 per cent of injuries reported occurred in the home.

Single pane glass of $\frac{1}{8}$, $\frac{3}{8}$, and $\frac{1}{4}$ inch thickness were involved in 90 per cent of the injury cases.

Hurrying was reported as a factor in the accidental injury more often than slipping, crowding, or horseplay combined. A typical case involved a mother running through the patio door to rescue her child from the pool.

Reflection, glare, or dazzle did not appear to contribute to difficulty in detecting presence of the glass door.

Twelve per cent of the injuries were recorded where there were designs or decals on the glass.

Seven per cent of the injuries were recorded where there were muntins or separation bars.

Had safety glass—laminated, wired, or tempered—been used, all of the 110 injuries recorded could have been prevented or limited. Since these surveys were completed, we have continued to receive numerous reports of accidental injuries associated with glass doors and panels. For instance, from only one hospital, in Memphis, Tennessee, we received reports on 54 cases admitted to the emergency room in the twelve month period ending March 31, 1966.

From one county in Florida 120 injury reports were documented in the past year.

From one Northern city more than 20 disabling injuries reported were from impact with the glass in storm doors in a three-month period.

We will continue to see widespread publicity on these cases since there are millions of homes equipped with unsafe glass doors. This is one facet of the problem.

The other is related to new installations. With industry and builders' cooperation, no cutting and piercing injury should be reported from new installations if safety glass is used.

What is the mood in Washington right now? First of all, it is very heavily weighted toward consumer protection. The President said last year, "What is new is the concern for the total interest of the consumer, the recognition of certain basic consumer rights."

He listed: (1) the right to safety; (2) the right to be informed; (3) the right to choose; and (4) the right to be heard.

The first is certainly aimed at reducing the number of injuries from the use of consumer products. And you know what is happening. You know of the report to the Surgeon General on cigarette smoking and its link to cancer and heart disease. You know of the Ribicoff hearings, the Commerce Committee hearings on automobiles, and Ralph Nader's book entitled "Unsafe at Any Speed" and subsequent action by the Congress.

On October 3 of this year the Child Protection Act was passed by both houses of the Congress. This is an amendment to the Hazardous Substances Labeling Act, and bans hazardous toys and other articles intended for household use. In the supporting statement by Senator Magnuson at the time the bill was introduced in the Senate there was a specific reference to injuries caused by "shattering glass doors."

In the House of Representatives we now have a permanent Subcommittee on Consumer Protection. This committee will investigate the role of industry in providing a reasonable degree of product protection. A similar committee is operating in the Senate.

A recent issue of *Business Week* stated, "Newer, tighter federal controls face tire makers, packagers, food processors, drugs, cosmetics, chemical manufacturers, advertising industries, and every manufacturer whose plant is a source of air or water pollution." What they didn't add is implied in their next article . . . "every manufacturer whose product is involved in an accidental injury to the consumer." This is the eventual end to this trend.

Where do we stand now? There's been a lot of water over the dam since 1962. We've plowed through the multitude of evasions, excuses, delays, proposals, and other tactics that I label "How not to cooperate with government."

In spite of all these evasive tactics, we have many metropolitan areas and building code amendments and one state that requires safety glass in all doors and panels where injury may be expected if the normal course of human behavior prevails. California, Oregon, and Pennsylvania have bills

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under consideration. In addition, we have more than 156 local building codes in eleven Western states where some form of protection is afforded by amendments to their building codes or by new legislation designed to protect the consumer. In Florida we have the South Florida Building Code, which has been modified several times, and may eventually provide a modicum of protection for the folks that are concerned with practical protection for their families.

After a series of negotiations, the Glass Door Safety Committee of the Architectural Aluminum Manufacturers Association is assembling a package that can be promoted to the national code organizations, to the building and loan associations, and to state governments. Where metropolitan governments are involved, they will receive the same information. Here is the proposed package:

1. A guide for a model building code or legislative amendment that specifies safety glass in all doors, fixed adjacent panels, shower and tub enclosures, and in all storm doors. These are the areas of high risk and should not be ignored.

2. The Z97.1 specifications of the American Standards Association. This specification spells out the tests required to identify safety glazing, specifically tempered and laminated glass and plastic products. We anticipate a separate set of specifications to cover wire glass. Participating committee members have voted to endorse the tests and requirements for safety glass. It has now been submitted to the Safety Standards Board for approval.

3. A major revision of the FHA Minimum Property Standard, to be effective January 1, 1967. This MPS will insure that all doors and adjacent fixed panels be of safety glass. The previous safety standard required safety glass, except in those installations where a muntin or divider bar was

installed over annealed glass. The revised MPS will eliminate the muntin or divider bar as an escape clause.

4. Action by the Board of Directors of the AAMA to insure that safety glazing is required in all glass doors bearing the QC label. This is a major, voluntary step by the industry; it may well protect them from restrictive legislation.

What can you do when you take stock of the actions necessary to implement programs?

1. Find out what your building code in your city and state says about safety glazing.

2. Alert your mayor, health officer, and building code officials to the problem and some of the suggested remedies.

3. Be ready to program the "Package" when it becomes available in early 1967.

4. Use program aids. The following program aids are available from the Regional Offices of the Division of Accident Prevention:

Film—"A Glass Door Lesson for Charlie." This includes a demonstration of the breaking patterns of glass, similar to the one you saw presented by Mr. Zeolla this morning.

Brochures from the Architectural Aluminum Manufacturers Association entitled "how to live with and enjoy glass doors."

Small demonstration kit to show the breaking patterns of glass, which includes a script.

We know that you have safety problems of greater magnitude than glass door injuries. We also know that priorities in program planning may delay action. But if you want to tackle a relatively new and preventable problem, I suggest you include this information in your program package for 1967.

A SHOCKING EXPOSE

By RICHARD E. GALLAGHER

Health Education Consultant, Community Services Branch, Division of Accident Prevention, Public Health Service, U.S. Department of Health Education, and Welfare

As you probably know, there are about 1,000 deaths each year from electrical current. About 300 of these are in the home and the other 700 are related to people who

work in the electrical industry; linemen, union workers, electrical workers. Which leaves us a little suspicious that all we really see is the tip of the iceberg—this

may seem like a small number of fatalities, yet to those 1,000 families who lost a loved one, it's a very real problem.

From surveys that have been conducted, it is quite apparent that the public knows little about the nature of electrical current and its injurious effect upon the body, even in very small quantities. Too often we hear of the minor electrical contact producing the proverbial "ouch!" reaction. Little consideration is given to electrical injuries causing burns, paralysis, heart fibrillation, and other injuries indirectly related to electrical contact.

This nonchalant attitude about the hazards of electricity was brought to our attention in a recent survey in Norman, Okla.

In this survey, three per cent of the homes in Norman were sampled to determine:

1. How often people experience electrical shock.
2. How many homes have grounded electrical outlets, and if the occupants are aware of it.
3. The meaning of the Underwriters Laboratory label to purchasers of electrical items.
4. What is done with the third prong on appliance cords if it cannot be used.
5. How many persons know how to apply artificial resuscitation following electrical shock.

The findings showed that husbands seemed hardly more knowledgeable than wives on most questions about grounding, the significance of the Underwriters label, or rescue and emergency treatment for electric shock:

1. A total of 849 persons lived in the 277 households sampled. Although 48 persons had experienced some degree of electric shock, little concern was expressed because there were no fatalities.
2. About 50 per cent did not know whether their electrical outlets were grounded or not.
3. About eight out of 10 respondents do not look for the U.L. label when selecting appliances, nor do they know the meaning

of the U. L. label. To many, the U. L. label stood for Union Label.

4. Nearly eight out of 10 persons do not use properly or understand the purpose of the third prong on plugs to appliance cords.

5. About one-half of those interviewed had no knowledge of any type of artificial resuscitation.

It is apparent from these findings that much remains to be done if injuries from electricity are to be reduced.

Fortunately, many health departments and other organizations have shown more than a casual interest in the prevention of injuries from electrical current. For example, prior to conducting the Norman, Okla. survey, staff members of the Division of Accident Prevention assisted another health department in Oklahoma to develop a very simple demonstration kit designed to inform persons about the cause and prevention of electrical injuries. The demonstration program was well received, but its use was limited to small groups of 25 persons or less.

Encouraged by the success of the small demonstration kit, we developed a larger, more complex unit. After the larger kit had been used several times, we knew that its size and complexity made it impracticable for use by health personnel or others in community injury control programs. The best features of the small and large kits were combined to form the "medium" size unit you see here.

For those of you who have an interest in presenting a similar demonstration, we are preparing a publication entitled "Electrical Injury Prevention Demonstration Guide." The guide will contain helpful suggestions for use of the kit, a suggested script, plans for building the kit, and the source of commercially prepared kits, if you prefer to purchase one. A listing of program aids, materials, and other helpful information will be included.

If you want to receive a copy of the guide when it becomes available, or get assistance in developing off-the-job community injury control programs, contact the Accident Prevention Program of your state health department or the U. S. Public Health Service's regional accident prevention consultant in your area.

U.S. DEPARTMENT OF LABOR'S SAFETY PROGRAM

By JOHN F. HENNING
Under-Secretary of Labor

In order to appreciate the present dimensions of the industrial safety problem, it might be well to review the beginnings of our industrial society.

Worker safety became a critical issue with the coming of the factory system. The Industrial Revolution, which began in the last quarter of the 18th century, was to change forever the relationship between the worker and the employer. In a more profound sense, it was to change the relationship between man and the state.

Worker safety was hardly a major issue in the handicraft system which prevailed in Europe and along the Atlantic Seaboard in this country prior to the invention of the steam engine by James Watt. Industrial accidents were among the more demoralizing abuses of the early factory system. It has been said that during the 19th century inanimate elements entered the factory and came out refined, polished, and attractive. Human beings entered the factory and came out degraded.

One of the dehumanizing features of the early factory system was that the safety of the worker was ignored. The abuses of the industrial order of the 19th century were visited not only upon men but upon the women and children who worked in the mines and mills of our industrial system.

Stories of the scalping of women working in the textile industry are common in the history of New England factory life.

Now out of the exploitation of men, women, and children there came certain reactions. One of the reactions to industrial abuse was Marxism. If you would doubt this, you need only recall that communism would have been a political impossibility before the coming of the Industrial Revolution.

Unionism was another reaction, or response, to the new industrial order. Modern unionism dates not from the crafts and guilds of the Middle Ages, nor from the crafts and guilds of ancient Greece and

Rome. Modern unionism traces from the factory system. Our oldest international unions date back to approximately the middle of the 19th century. The union existence we knew before then in America was fragile and usually did not survive.

There was a third response to the new industrial order—social legislation. The first safety laws protecting workers were initiated in the Germany of Bismarck. There were totalitarian aspects to Bismarck's Germany, but out of his regime came the first workmen's compensation laws and the first industrial safety laws.

Industrial safety laws came later to Britain, but, surprisingly, not until the turn of the century. It is perhaps more than coincident that factory laws came to Britain at the time of the formation of the British Labor Party. Safety laws came much later to the United States. We were among the last of the industrial nations to think of protecting the worker. Actually, the United States was 60 years behind Germany's social safety legislation. If we look at our past, we will find that most of our safety legislation was developed during the progressive years of American political history — the years which reached from the turn of the century until our entry into the first World War.

It was during this era that various states acknowledged the humanity of the worker. You must remember that it was the states that led the way, not the Federal government. At the state level it was the time of the LaFollettes in Wisconsin, Hiram Johnson in California, Al Smith and Madame Perkins in New York. Yes, it was the day of state industrial reform.

In that period which reached from the turn of the century until our entry into the First World War, 32 states adopted industrial safety laws of one dimension or another. It was in 1914 that we adopted our first workmen's compensation law in Wisconsin.

The U.S. Department of Labor was not founded until 1913. It was the product of the progressive thought of the era but in its original form it was not much concerned with industrial safety. According to the organic law that brought the Department into being, it was formed to promote and advance the welfare of the workers of the nation, to improve their working conditions, and to increase their opportunity for profitable employment.

In 1914 the Bureau of Labor Statistics was founded to accumulate and report statistics of labor.

I hope I am not talking treason, but I like to think that our Department of Labor jurisdiction in the theater of industrial safety is essentially one for morality and education. Our mandatory jurisdictions are meager. We have the Longshoremen's and Harbor Workers Act. We have the Walsh-Healey jurisdiction. But safety laws essentially rest with the state, and I want to believe that the states will provide leadership in assuring industrial safety for the workers of this country.

With respect to labor-management history in Europe, the industrial revolution not only resulted in Marxism and unionism, but it also separated the worker from the employer in enduring fashion. Fortunately for us, the social democracy of the frontier and the liberal legacies of Washington, Jefferson, and Franklin and the founders of the Republic spared us the agonies of class distinction. There never was in this nation a sense of social and economic confinement such as we still find on the continent of Europe.

The workers of America have always considered themselves equal to the employers, both politically and socially, and they did their best to achieve equality in the world of economics. For this we should be grateful because we have been spared the problems which have destroyed the harmony of European history.

In the sphere of industrial safety we have the opportunity of combining the values of the working people, the employers, and government. The role of the federal government should here be one of advice and consultation.

We have the opportunity in industrial safety, as we have had historically in the apprenticeship system, of bringing labor and

management together at times when they do not have conflict under way over the wages and hours that may be specified in a worker-management contract. And so, just as in the apprenticeship programs which bring labor and management together month after month to discuss subjects outside the areas of collective bargaining, we have the opportunity here of strengthening the relationships between labor and management through the development of occupational accident prevention programs.

On another front, I think it is essential for unions in the future to provide through their collective bargaining contracts for the existence of labor-management safety committees. I do not know of any inventory or catalogue that now lists the quality and quantity of these types of labor-management committees but I sincerely trust that they will flourish in the future.

Returning to what the proper role of government might be in industrial accident prevention, I submit that it should dispose of the residue of those problems which cannot be resolved by the various states. This is not to ignore our statutory obligations under the Longshoremen's and Harbor Workers Act or the Walsh-Healey Act, however.

In past years, this had been the traditional position of the Department of Labor. Recently, we established an advisory committee of safety specialists from various segments of our society for the purpose of guiding our Department in the matter of our Walsh-Healey jurisdiction. We have made it clear that we will insist upon state compliance with minimum safety standards in the Walsh-Healey area, but we have no grasping bureaucratic ambition to do the work of states where they have the will and the capacity. The Secretary of Labor has declared that as long as state-established safety standards meet federal minimum requirements under Walsh-Healey, and as long as such states have the capacity to enforce these standards, the Department would not interfere. Certainly, this makes sense. Of course, this would not allow states which have only two or three factory inspectors to assert a federal jurisdiction.

John Cullerton indicated that he would like to see a state governor's safety conference held in Illinois. I would like to mention that various other states, including Cali-

California and Ohio, have been conducting such conferences for quite sometime. I would also like to add that it is possible to have a conference of this type sponsored without public funds. I know of states that have been fortunate enough to have labor unions and business companies underwrite the costs of such conferences. In the area of apprenticeship, we found in California that labor and management will eagerly sponsor state-wide conferences for the common industrial good. I believe that this approach to state safety conferences might be well followed.

With regard to the place of the states in industrial safety, I can't help but remember that when I was in California that state became the first to establish specific safety orders for the farm workers. All other states covered farm labor safety practices through general industrial safety orders. We not only regulated the employment conditions of the farm worker but we also established conditions for the transportation of farm workers, covering transportation on public highways through amendments to the vehicle code, and on the farmer's property through the enactment of safety orders.

California became the first state to promulgate specific safety orders in regard to the control of noise and its impact upon the worker. We did this despite the cries that this would make loss of hearing a compensable injury, as indeed it must be.

There is so much that can be achieved through the initiative of state government

in terms of enlightened safety practices. California sent three of its industrial safety inspectors to Eastern universities in 1958 for radiation safety studies. This allowed them to later direct the radiation accident prevention activities in California.

In terms of fortifying state standards, I would suggest that this organization, together with labor, management, and the U.S. Department of Labor, call a national safety conference to consider minimum standards that would assist or apply to the several states. It is ridiculous to talk of a national position on safety if we have a wide difference in standards throughout the various states.

We need, then, a meeting of minds of the various state safety authorities and labor-management safety authorities with the role of guidance provided by federal government, to establish minimum safety standards for all of the states.

We might liken this history to that found in the story of minimum wage legislation. The first laws were enacted at the state level more than 50 years ago, and it was not until the 1930's that we came to national concepts in the area.

Some 14,000 industrial workers die every year on the job, and more than two million lost time accidents are suffered each year through industrial accidents. I say that we have left forever that era when industrial injuries were held to be the inevitable companion of industrial progress.

✓ THE STATE'S ROLE IN SAFETY

By JOHN CULLERTON
Dir., Illinois Dept. of Labor, Chicago, Illinois

Governor Kerner has asked me to express his sincere best wishes to the members of this convention; to say that he appreciates the very great services performed by the National Safety Council in the interest of health and safety; and to assure you that, as Governor of Illinois, he will continue his efforts to make Illinois one of the safest places to live and work, of all states in the Union. Five years ago, the Governor directed the Department of Labor to embark

upon a continuing drive to improve its safety programs.

We have vigorously carried out his directive, working in cooperation with the U. S. Department of Labor. Ours is an ongoing program which might be described as having two major purposes.

1. We have accelerated in every possible manner, and with every resource at our command, the safety education programs. We have had the utmost of cooperation and

support from the U. S. Department of Labor in conducting scores of safety seminars throughout the State. We have conducted some 60 such seminars in industrial centers during the last four years, and at this very moment we have a safety caravan on the road holding such meetings under the direction of Edmund Kornowicz, our Superintendent of Safety Education and Inspection, and experts of the U. S. Department of Labor.

These seminars, providing for 30 hours of classroom instruction in safety procedures are given without cost to the participants. All materials are furnished free of charge. And the courses are open to safety representatives of private industry, municipal agencies, plant foremen, union supervisory personnel and members. Personnel responsible for the safety of over 2 million employees have benefited from these classes. I am not going to enumerate all the kinds of instruction provided, but I want to emphasize that safety procedures for industries, construction projects, chemical plants, and a wide range of other types of work are included.

We have stretched our financial resources to the limit to put these safety caravans on the road, to pay the usual expenses for travel and instruction materials, and to generate interest in the seminars.

They have been so outstanding in results that Illinois is now credited with having one of the best safety education programs in the country.

Finally, in regard to education, all of the department supervisory and inspection personnel is required to take the courses, and to attend "refresher" classes at regular intervals.

2. The second major purpose of our program involves a step-up of our on-site inspections. Safety rules and regulations under the Illinois Health and Safety Act are promulgated by the Illinois Industrial Commission, not by our department. We also enforce the Structural Work Law, the Work Under Compressed Air Act, the law concerning Washrooms in Certain Employments, Sanitary Standards for Butterine and Ice Cream Factories, and the Safety Inspections and Education in Industrial and Commercial Establishments Act.

There has been and will continue to be

a steady gain in our inspection programs. In 1965 fiscal year, there were 22,656 regular inspections, an increase of 12 per cent in inspections, and 10 per cent in the number of workers serviced. The 22,942 re-inspections made in 1965 fiscal represented an increase of 13 per cent in the rechecking activities. I might say also that it was found that in 1965 the reinspection compliance was four times better than in 1961.

I should like to point out two very critical deficiencies in our safety programs.

First, we have only 56 inspectors in the Industrial Safety Unit, to check on literally thousands of small and large industrial units. We have only 11 inspectors in the Construction Unit to check on one of the biggest statewide construction programs in the Nation. Our Industrial Hygiene Unit is in dire need of additional, competent personnel.

Second, it has long been a matter of considerable concern that we have been unable to attract highly qualified personnel, because the starting salaries are low. We need a generous upgrading of salaries so that we can attract graduate safety engineers to our staff. Presently, we must employ less qualified personnel, and then seek to provide on-the-job training to raise the qualifications of the staff. This is an unwise, unsound and uneconomic process.

Summarizing, it can be said that our safety program is understaffed and underfinanced, that the program as it is now conducted (and we are doing the best we can with what we have) does not meet today's needs.

Nearly two years ago, at Governor Kerner's request, a Commission on Government was established to survey and recommend restructuring of governmental programs and processes. This commission will report next year. It is a group of highly-qualified experts, and it is expected to submit many recommendations for a drastic overhaul of functions. Some of its recommendations will concern the Department of Labor, and when the commission's report is made, I urge that the National Safety Council give its full support for all suggestions for improving our safety programs.

I should also say, at this point, that the Safety Advisory Board appointed by Governor Kerner, including expert representatives from business, industry and labor, has

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been an active, hard-working group which has given invaluable assistance to our programs. The board meets on the average of six times or more per year, and takes an active part in formulating our safety procedures.

Great as has been the participation of business, industry and labor in our safety seminars, it does seem to me that much more participation is desirable. I ask the help of the National Safety Council in convincing such groups that it is only good business to conduct safety education drives, safety cleanups and constant safety supervision.

Accidents have been costing Illinois business and industry some \$342 million per year. This figure includes medical expenses, compensation indemnity, and other costs, including lost product. Now \$342 million is a terrific annual loss that could, without great incidental costs, be shaved considerably.

I would urge that every business and industry in Illinois employing more than 10 persons go back over the past five years to average out its annual loss from injuries-on-the-job; that when this figure is ascertained, each company budget for the next five years for safety training at least one-half the cost of injuries to that company over the past five years.

In other words, that it spend on safety for the next five years just one-half of what it lost on injuries in the past five years. I think it would pay some of the best dividends ever earned by such concerns.

Since working men and women also sustain losses in about an equal amount—about \$345 million—due to lost time, lost wages, hospital and doctor bills, I should think that unions could well adopt a similar procedure of investment for safety education.

In my opinion, it is better to invest in safety education than to put money in

hospital and doctor bills, or payment for permanent injuries.

In the last session of our legislature an appropriation of \$5,000 was sought to hold a statewide safety education conference, bringing in experts from various fields to instruct representatives of Illinois business, industry and labor in the latest techniques of preserving life and limb. Unfortunately, these funds were not available.

If this request is renewed next year—and I believe it will be—I urge the National Safety Council to throw the full weight of its very considerable influence behind this information and educational project. I think we ought to have an annual Illinois Safety Conference, and I think that \$5,000 is a pretty modest sum to invest in the health and safety of over 4,000,000 non-agricultural workers in the state. I think that if such conference were held just once, and the results assessed during the ensuing year, Illinois businessmen, labor leaders and industrialists would insist that the results had justified holding an annual conference.

I believe such a conference would lead eventually to better analyses of the causes of accidents, better use of the existing safety staffs without overburdening them with the actual policing jobs which they should not perform, better in-plant and on-the-job training and distribution of safety literature, adoption of periodic and unannounced in-plant inspections, and a better upgrading of safety processes to keep step with changing technology. Such a conference would also immediately produce a better intra-industry exchange of safety information.

I place these suggestions before you, because I believe that the National Safety Council, as the agency pre-eminent in this field, can do much, much more to assist in our safety education programs. We need your help. We need your support. And we need your guidance and advice.

HOW OUR NEIGHBOR LOOKS AT GOVERNMENT RESPONSIBILITY FOR SAFETY

By H. Y. YONEYAMA

Director and Chief Inspector, Industrial Safety Branch,
Ontario Department of Labour, Toronto, Ontario

The prevention of industrial accidents is one of the major concerns, if not in fact the major concern, of the Ontario Department of Labour. We have carried forward a comprehensive program of attack on industrial accidents, utilizing not only the inspection and regulation weapon, but research, education, and labour-management co-operation as well.

Since 1963, all of the safety legislation of the Department has been reviewed and modernized. The enforcement capability of all the safety branches has been expanded and improved, several times over. Here, briefly, is the structure of the Department's safety branches and capabilities.

The Safety and Technical Services Division conducts four main types of activities in the development and administration of safety legislation: the study of hazards and their control; approval of designs; licensing of installations, i.e., boilers and elevators; and the field enforcement of statutes and regulations. The division, in essence, acts as a co-ordinating head for the activities of all the following branches. All five branches are responsible to the Office of the Director of Safety and Technical Services who directs, supervises, and co-ordinates their activities. The director also furnishes liaison with the Labour Safety Council of Ontario and other government departments, commissions, and boards.

The Industrial Safety Branch is composed of two sections, the Safety Section, which makes inspections of industrial and commercial establishments, and the Engineering Section, which examines and approves drawings of buildings and equipment to ensure that they will be safe for occupancy by employees and the general public. The branch has 88 engineers and inspectors who made a total of 59,688 inspections, issued 53,632 directives on the guarding of machinery, ventilation, sanitation, welfare, exits, personnel protective devices, and safety or

health hazards. The branch staff also approved the construction of 3,546 buildings or other projects with an estimated value of \$364,096,900.

Branch inspectors are finding it necessary to "tag out" from use increasing numbers of machines for which guards are either not provided or were provided and then removed. The number of such stopwork orders doubled from the fiscal year 1962-63 to 112 in the year 1963-64, increased another 150 per cent to 283 in 1964-65, and an additional 10 per cent to 310 in 1965-66. The new Industrial Safety Act became law in 1964-65.

During the past year, the Industrial Safety Branch has set records in all its sections. The number of inspections carried out was significantly larger than in any previous year, as was the volume of plans for commercial and industrial structures, equipment, and processes examined by the Engineering Section. Last fall, the new regulations governing safety in connection with grain elevators went into effect. This year, detailed requirements for punch presses are being developed.

The Construction Safety Branch provides for the safety of workmen:

(A) During the construction, alteration, repair, demolition or removal of buildings or other structures, and of streets and highways.

(B) Engaged in the excavation of trenches.

(C) Engaged in underground work in shafts, tunnels, caissons, cofferdams, and under compressed air, when used.

The Branch's inspectional staff consists of 16 inspectors who work with the 246 municipally appointed inspectors enforcing the Construction Safety Act and more than 1,000 enforcing the Trench Excavators Protection Act. In the last year, there were 133,232 inspections of construction sites which resulted in 153 charges and 61 con-

victions. Stop-work orders were issued in 1,800 cases where dangerous working conditions existed, and orders to correct unsafe conditions numbered 10,334.

The branch officers instruct, advise and assist the municipally appointed inspectors, make regular visits to each municipality to carry out joint inspections, and discuss interpretation and policy matters with local authorities. Caisson inspectors made 2,832 inspections on 362 projects involving 177,580 linear feet (33.6 miles) of tunneling.

With 246 construction safety inspectors covering the construction field across Ontario as against virtually none only four years ago, there was in 1965, for the first time in many years, a marked decline in the industry's accident frequency. However, in spite of the fact that the number of construction safety inspections carried out annually has jumped from a handful in 1961 to more than 140,000 in 1965, the toll of accidents and fatalities remains far too high to allow anyone to be complacent.

The Elevator Inspection Branch enforces legislation respecting the safety of persons using elevators, escalators, dumbwaiters, ski tows, lifts, and construction hoists. It is also responsible for the examination and approval of drawings and specifications for proposed new or altered installations. The Branch's 22 inspectors operate in 24 Provincial Districts, and last year made a total of 7,989 inspections, issued 16,837 directions for improvements or licensing, and shut down 349 unsafe installations, of which 110 were closed permanently. One thousand five hundred sixty-six construction hoists were examined and 2,732 directions were given for improvement or licensing.

The Board of Examiners of Operating Engineers ensures competent personnel for the safe operation of boilers and power plant equipment. The Board is composed of four holders of Certificates of Qualification as first class stationary engineers with not less than 15 years of operating experience. In the last year, the Board issued 644 (new), 4,378 (total), registration certificates to plant owners, 2,555 (new) and 29,256 (total) Certificates of Qualification to operating engineers. The Board has currently updated the *Basic Power Plant Engineering Textbook* and re-published the *Operating Engineers' Handbook*, which is widely distrib-

uted throughout the world to other governments and safety organizations.

Of the 417 violations of the Operating Engineers Act and regulations, the majority of violators were co-operative in executing the necessary changes, and 384 of these violations were corrected during the current fiscal year.

The new Operating Engineers Act provided for the appointment of a Board of Review, consisting of three representatives of operating engineers and an impartial chairman to advise in connection with the safe operation of power plants and the training and qualification of operating engineers. The board is grappling with the complex problems of developing appropriate detailed regulations under the new act. When its work has been completed, the Act will be brought into force. At the same time, the board is studying more effective means of training operating engineers.

The Boiler Inspection Branch inspects boilers, pressure vessels, and plants, examines their drawings, inspects welding, and performs other related duties. Forty-eight inspectors last year inspected 53,928 boilers, pressure vessels, and plants, and 3,021 new designs were approved. Inspectors investigated 23 accidents and explosions, made suitable directions to prevent similar failures, and condemned 35 pressure vessels and 32 boilers. The Branch issued 248 certificates of competency to boiler inspectors of boiler insurance companies and tested the competency of 8,633 welders. In all, 21 boiler inspection districts have been established to efficiently serve industry in all parts of Ontario.

Labour Safety Council

To co-ordinate programs at the policy level and advise on all matters pertaining to safety education, enforcement, and accident prevention, the Labour Safety Council has been reconstituted with management and labour representation from the principal segments of industry across Ontario. At the Council's request, and in order to assist it in studying all phases of accident prevention, arrangements have been made for the Industrial Engineering Department of the University of Toronto to conduct a full-scale study into the underlying causes of accidents. This was the Labour Safety

Council's first major recommendation. The Council believes that this study will provide basic information upon which the most effective approaches to the complex matter of accident prevention can be determined.

We have also enabled the Workmen's Compensation Board to impose penalty assessments on firms displaying poor safety records. Assessments are, in some cases, being doubled at the cost of thousands of dollars to firms that have neglected safety precautions. To date, for example, a total of 1,728 firms in Ontario have received penalty assessments costing them more than \$4,400,000.

Supporting this structure are seven associations who represent the various segments of our industrial complex. They report through the Safety Education Department of our Workmen's Compensation Board and play an increasingly important role in the dissemination of information relative to safety education and accident prevention.

It is apparent that the safety of workers is a problem that must deal with two main issues—morality and economics. From the standpoint of morality, the worker's contribution to society leads him to expect some measure for protection from that society. The economic aspects are even more apparent. Lost man days in Ontario alone had, by the end of 1965, climbed to 2,600,000 for a total loss of \$31,600,000.

How does our neighbour look at government responsibility for safety? I think our attitude could best be described by the phrase, "with grave suspicion". Our attitude has, in the past, to a large extent been colored by many forays with management, with labour, and with public media who traditionally cry that government is cloaked with responsibility for the public safety. That is only partially true.

While we accept this mantle gingerly it is apparent, after many skirmishes, that we really should be cast in the role of only one of the participants who provides legislative protection and provides, in concert with management, unions, and other responsible groups, a safe atmosphere for our industrial society.

The word "suspicion" is an apt one, since we are beginning to suspect that the tried and true methods that have grown like Topsy over the last fifty years are, in many

cases, incapable of dealing with our accelerating industrial society.

As an example, our own industrial revolution occurred at about the same time as yours, and in its early stages the wheels of our industry were lubricated as was yours, not only with sweat, but with a modicum of blood. In an effort to protect the public and the industrial worker, we as every government does, forwarded protective legislation that was designed to meet the conditions of the particular time. What has happened since then is the gradual addition of laws and regulations, like so many building blocks to form a protective wall around industry. From time to time, we have removed bricks that no longer fit, repaired crumbling mortar, and like the little Dutch boy, attempted to stem the tide of accident increase with our fingers when cracks developed.

Canadian legislation is perhaps among the most advanced safety legislation of our time. I think you will condone this immodesty since I hasten to qualify that our legislation deals with less industry and fewer workers than our neighbours. While Ontario, for example, has a total population of six and a half million, there is a working population of two and a half million.

Most safety legislation is aimed at employers, and this may well be the origin of the term "safety is management's responsibility". While management has a major responsibility for safety and must provide leadership, I have noted a marked tendency to use the word "responsibility" interchangeably with "legal responsibility". There is a great difference in these terms, and used improperly they seem to suggest that safety is management's responsibility. This is patently untrue, for we all know what would happen to the employee who relied solely on management protection or who refused to obey common sense safety rules. Which leads us to the last member of the safety trio.

Any safety program will be ineffective without the full support of the employees concerned. Truisms, while usually trite, have the saving grace of always being true. Management can only achieve some measure of industrial safety through the individual success of each employee who avoids injury through application of responsibility for him-

self and his fellows, who uses his his knowledge, tools, and safety equipment to the best of his ability.

It may be however, that we are attacking symptoms rather than causes. We have, as I have said, begun to explore the nature and true cause of industrial accidents since it is apparent that legislation, regulations, and good intentions do not in themselves solve the dilemma of rising accidents. They do, however, provide us with a legal, and we hope precise, framework to operate within. With our study, we hope not only to define the industrial accident and the role of the chief participants, but to be able in some measure to anticipate the future and legislate, not only for this period, but in anticipation of the developments of the new industrial climate. I might say that we, as every prevention body is, are working towards the day when we can no longer be employed. We are assured by many economic planners that the advent of sophisticated technology (automation, if you will), will relegate the industrial workers to pushing buttons and performing monitoring functions for three hours a day.

Our chief aim at the moment is to keep workers alive and kicking until that day arrives. However, I might note that since less than two per cent of our industry is fully automated, I feel no immediate need for a job re-training course.

Our department has continual exchanges of ideas, statistics and operation descriptions with our other provinces and other countries. We have just recently completed the first of two ministers' safety conferences where representatives of trade unions management, and government have come together to re-examine ideas generated by individual research. We have, as well, been host and key participant at the recent International Labour Organization Manpower Conference, which discussed in some detail the international aspects of safety education and preventive techniques.

All of us then—government, management, and employees—share the responsibility for industrial safety. As government becomes more adept at defining it legislatively and management more adept in recognizing it as a method of enhancing the balance sheet and employees learn to use the safety mechanisms provided for their own protection, we may yet find formulas that work better than our current situation-by-situation approach. Frankly, I cannot give you omniscient answers, but I know that if we, together, carefully select our questions and behave honestly and with proper concern in the area of our responsibilities, we will arrive at solutions that lessen and may eventually stop industrial accident and death.

DISCUSSION PERIOD — WHAT'S BUGGING YOU?

Delegates who attended the labor sessions were asked to submit written questions concerning safety problems within their areas of operation, or questions that were generated by the safety sessions that they attended during the Congress week. These written questions were reviewed and answered by a panel of safety experts.

Presiding Officer: John R. Kumpel, Safety and Compensation Representative, United Rubber Workers, Akron, Ohio.

Moderator: Jacob Gold, Safety Engineer, Bureau of Labor Standards, U.S. Department of Labor, Washington, D. C.

Panel Members: Alan F. Burch, Director of Safety, International Union of Operating Engineers, Washington, D. C.; John L. Dowling, Director, Safety and Health Division, United Steel Workers of America (Canada), Toronto, Canada; Charles T. Greene, Director, Industrial Safety, District of Columbia Minimum Wage and Industrial Safety Board, Washington, D. C.; Floyd Van Atta, Ph.D., Deputy Director, Office of Occupational Safety, Bureau of Labor Standards, U.S. Department of Labor, Washington, D. C.; Victor E. Whitehouse, Safety Director, International Brotherhood of Electrical Workers, Washington, D. C.

Moderator: Are penalties provided for violation of safety codes in the various jurisdictions actually sufficient to act as a deterrent to the violation of codes?

Mr. Greene: I would say no; they are not sufficient. The amount a company has to pay for a safety code violation is not enough to act as a deterrent. However, publicity is more of a deterrent than any fine that could be imposed. Of course, the only way to have adequate publicity is to impose a fine that is out of the ordinary.

We had a contractor that was fined \$300 for a violation, which was the maximum fine that could be imposed. Later, the contractor indicated that the fine was nothing compared to the adverse publicity from the newspapers, and that he would have much rather paid a \$3,000 fine than experience the publicity.

Moderator: In the province of Ontario, where the circumstances constitute an offense against the Industrial Safety Act and this offense occurs consistently, every person or employer who fails to comply with the provisions of the regulation, or the directions of an inspector, or the conditions of an approval permit is subject to a fine of not more than \$1,000 for each day of the violation or to imprisonment for not more than 12 months for each day of infraction.

Dr. Van Atta: In school I was taught that it is not the nature of the penalty but the certainty that the penalty will be imposed that encourages compliance. Our main problem in this country is not the penalty but the fact that most of the people who are violating regulations will not be penalized regardless of what the law says. This is probably because we do not have enough inspectors to cover the areas.

Moderator: There are far too many accidents involving high voltages which cause burns, electrocutions, and falls from high places. These accidents occur to electricians, linemen, and other craftsmen above the age of 60 who do hazardous work. Few of these old timers will admit the weakening of their grip, failing eyesight, weak heart conditions, or a tendency to experience dizziness. I don't believe that a compulsory medical examination is the answer, but there must be some solution. Perhaps workers over 60 should be prohibited from working in high

places and assigned to other challenging work.

Mr. Whitehouse: A man 60 years old is not really the criterion. We in the International Brotherhood of Electrical Workers have many examples of men 25 to 30 years of age who have a heart condition, are epileptic, or suffer some other problem. It is true that some of the IBEW locals have agreements with the contracted company which require a man of 50 and over who shows evidence of gaining weight or suffering from some health problem be transferred to a less hazardous job. On the matter of physical examinations, the men within the local union can schedule periodical examinations with their own personal physicians.

Mr. Burch: I am opposed to pre-employment physical examinations as a condition of employment, but I am not against physical examinations. I think the point in this question is an important one and that is that we must be our brother's keeper. Most unions have negotiated health and welfare plans, and these should include at least annual physical examinations. Of course, there is nothing stopping an individual from seeking his own personal doctor periodically; in fact he will probably discuss his job more freely and the type of work that he performs with his doctor. After the personal doctor advises the individual about his physical ability in relation to performing his job, it is up to the worker to decide whether he will continue or not. In other words, we should inform ourselves about our own physical condition and how it applies to our job.

Mr. Greene: In this case, there is a question of one person being a hazard to other persons on the job. I know of two or three instances where physical condition of a worker caused injuries to others. In another instance, a chronic drunk was directly responsible for the severe injury of three other persons. Both management and labor knew of this man's illness, but neither related it to his responsible job. I am in agreement that compulsory examinations are not the answer, but there is a joint labor-management responsibility to get together and decide when a person may be a hazard to other workers because of his health.

Moderator: Do you think that unions and management should work together in writing or changing a safety rule book?

Mr. Whitehouse: For years I have been preaching for joint labor-management safety committees to do this very thing. They should sit down and work out the procedures that are to be followed so that it becomes the responsibility of both labor and management to see that they are enforced.

In the past two years the IBEW and various managements have established over 800 joint labor-management safety committees. I am very strongly in favor of these committees establishing ground rules. This is a definite advantage for management. We have had cases in some of our locals where the union member was brought before the executive board and informed that the union agreed to these rules and regulations and he, as a member of the union, must comply.

Mr. Dowling: We deal with the Ontario Federation of Labor and favor its support of joint labor-management methods of rule and regulation writing, but I would like to add that once these rules and regulations are adopted they should be put into the working man's language. They should be developed in such a way that the working man knows what they are and he understands them clearly. In Canada, we print these rules and regulations in French for our French workers. The union also has an obligation to see that these rules are explained.

Moderator: A number of years ago Republic Steel Corporation wanted to communicate to all of its employees a better understanding of the economic problems of the company and how they affect the workers. They went to Brookings Institute for advice, then developed a play with 13 characters such as a farmer, business man, stock holder, manager, etc. The employees were assigned various parts and participated in the play at various locations all over the country. The principle idea was that participation would improve understanding and respect.

The company paid thousands of dollars for that idea, and it is believed that the same results can be obtained if the union is allowed to participate in developing safety rules. An example of such cooperation is the Carborundum Company's joint safety work with the Oil, Chemical, and Atomic Workers Union. This relationship is work-

ing extremely well and practically every one that I know of has worked very successfully.

Moderator: Do you think safety programs should be in the labor contract?

Dr. Van Atta: Certainly! A contract has to do with conditions of employment, and one of the major conditions of employment is your continued life. It seems to me that labor groups, in general, have been most remiss in that conditions of employment have not been included under safety. However, this is certainly no excuse for this to continue.

Mr. Greene: The contractors in the District of Columbia must comply with the regulations of our department. One of the problems with safety by reference is that most of the workers, and some of the management, do not have any idea of what these regulations are. They don't understand them. If safety is in the contract, the workers ought to have enough information so that they can know whether the regulations are being complied with or not. If they are not, the workers can act accordingly.

If their wages under the contract were not being paid, they would do something about it immediately. I believe that a union should act immediately if there is a hazardous situation that needs correcting in accordance with accepted codes and regulations. However, if people do not understand the regulations they do not know when the regulations are violated. The answer, of course, is training. Without training, the regulations will be unimplemented.

Dr. Van Atta: I have read a significant amount of contracts which were signed by people who thought they had negotiated safety into the contract. The standard phrase is "the company will continue to provide safe and healthful places in which to work." This is really just saying that the company will continue its existing bad practices. That is not negotiating safety. It is as worthless as a contract that says the company will continue to pay wages.

There is meaningful language which can be negotiated into union contracts and nearly all of the international unions can provide this type of language.

Mr. Burch: If the union has already sat down with management and worked out acceptable safety rules, the contract can contain meaningful language that is also simple.

For example, "both sides agree to adhere, at all times, to the safety rules agreed upon jointly." This keeps unnecessary words out of the contract and has the advantage that everybody knows what is being referred to. It also skirts the situation where the contract is filled with language aimed at everybody's particular grievance. The important thing is to get together and work out the rules and regulations by which you are going to live and then firm them up in a binding agreement so that everybody knows where they stand.

Actually the original question — should safety be negotiated into a union contract? — has been answered by the National Labor Relations Board. Not too long ago, there was a decision which was upheld after it was appealed, and it will probably be a landmark case in labor relations. The final ruling was that safety was a mandatory subject of collective bargaining.

Moderator: To what extent is voltage over 5,000 volts being worked on out of aerial baskets or insulated platforms with rubber gloves and sleeves?

Mr. Whitehouse: I would like to highlight two things. One, safety standards for the electrical industry recommend that any voltage over 5,000 be either de-energized, or grounded, or worked by hot stick. Two, aerial baskets are fundamentally a good tool because they place a man in a good position. However, these baskets should not be considered as an insulating or isolating device. The same rules apply when working voltages from a basket as when working from a pole. There has been a concerted effort on the part of management of many utility companies to go to 13,200 volts (and one wants to go up to 15,000 volts as a limit. A man can use rubber insulation for up to 20,000 volts; however, if his nose is still exposed, that is where he will make contact.

Edison Electric Institute made an analysis of accidents over the years and practically all of the contacts over 5,000 volts are not hand contacts. So, the rubber gloves are not enough, and it's not reasonable to expect a man to work completely enclosed in rubber. In the opinion of our organization, 5,000 volts is the limit for working energized lines except *via* hot stick.

Moderator: A major Chicago cab company has vehicles which have the fresh air

intake so placed that the exhaust fumes of the car immediately ahead are taken into the passenger compartment of the cab. This could constitute a serious health hazard and we are wondering what the National Safety Council can do about this situation.

Dr. Van Atta: Actually the Council cannot do anything about this sort of condition except publicize the hazard. It surprised me when I found that this cab company is still taking their fresh air into the passenger compartment through ducts that are located down low in back of the radiator. This is especially surprising when you realize that all other automobile manufacturers stopped this practice 6 or 7 years ago because of the number of deaths from carbon monoxide. I can't think of any conceivable excuse for this type of neglect in design which can cause serious injury. I would think that unfavorable publicity and perhaps one or two damage suits against the company for negligent design might have a most salubrious effect. These steps can be taken by the union and should be.

(Comment from the floor, by Joseph L. Algina, Safety Director, Seafarers International Union)—The local union that is involved with this cab company is meeting tonight and I will be present. I will recommend that this union take direct action to see that the condition is eliminated.

Moderator: How are safety and health problems handled under Canadian laws?

Mr. Dowling: We have an arrangement with the Director and Chief Inspector, Industrial Safety Branch, Ontario Department of Labour, Toronto, whereby I meet in his office to discuss any problem that involves steel workers. If there is a violation of the Industrial Safety Act, the initial step rests with the official of the local union involved. The local should extend every effort to get the violation corrected. However, if no corrective measures are taken the report is sent to my office. I forward it to the Industrial Safety Branch and an inspector is sent to the plant to check into the condition. Subsequently, we get a report from the Director of the Industrial Safety Branch indicating whether the complaint was upheld or rejected.

The foundry section of our union has a somewhat more refined method of liaison. The government inspector for foundries

must contact the local union officials before he visits a plant and must take the local's appointed representative with him during his tour of the plant.

In addition, the factory inspectors in the Province of Ontario carry a warrant with them and, if they are opposed by the employer, the inspector uses the telephone to call the local magistrate. A policeman is dispatched to the plant to serve the warrant on the person obstructing the inspection and has the person removed from the premises until the inspection is completed.

Moderator: Is there a standard clearing house that records a complete list of radiation exposures to workers handling radioactive materials?

Dr. Van Atta: Not in the United States, unfortunately. There was a bill introduced in the last Congress, but Congress did not act on it. We have high hopes that it will be handled during the next Congress, although we understand that there is considerable opposition to this bill from management sources.

Moderator: How can we get management to correct unsafe conditions promptly?

Mr. Dowling: I can only give you an illustration of what happened in the city of Hamilton, Ontario. I was conducting seminars in Hamilton when one of the crane operators in the plant called me at my home. He informed me that the wheels on the crane had become so worn that the electric shoes that pick up the electricity had dropped to where they were striking stud bolts, causing them to fall to the floor below. I called the shop foreman and he admitted that the condition was unsafe.

I then phoned the Director of the Ontario Industrial Safety Branch and he sent an inspector within 35 minutes. The inspector was in the plant for 10 minutes. He shut down the entire plant. Management was then obligated to bring in a contractor to replace the crane wheels. The plant was shut down for two shifts.

Mr. Greene: We have a way of getting things done also; however, it is sometimes rather late. When we receive a complaint we send an inspector to the location. Usually the condition existed for some time before we receive the complaint. It has bothered the worker, and he has probably complained

to various people but he doesn't contact us until the condition gets serious.

Mr. Gold: I think it must be apparent that the answer to this question depends in a large measure on the geographic area in which the plant is located. Some states have fine laws which will take care of these things if you push them. However, other states are quite lax and backward.

Mr. Kumpel: If you believe you are working in a hazardous situation and feel morally certain that you are right in your belief, then you should refuse to work on such operations until they can be examined by proper and qualified authorities to determine if the conditions need correcting.

Mr. Burch: I endorse what John says, but I would like to add that union strength varies geographically. A lot will depend upon the knowledge and guts of the local business agents.

Moderator: What are the effects of asbestos dust?

Dr. Van Atta: Breathing excessive amounts of asbestos dust over a period of 25 to 35 years, depending upon the amount and the person, will result in shortness of breath, circulatory and heart problems, and the person will probably die of heart failure. In addition, you will probably get no assistance from workmen's compensation, if you are under most jurisdictions. That is the classical picture of asbestosis. But, in the last few years, we are discovering that asbestos is a rather prolific producer of a variety of cancers of the lung and surrounding tissues. Asbestos is a skinny little crystal, like a needle, and it works into the tissues and promotes cancers.

One variety is appearing in rather substantial numbers among asbestos workers—it has always been there, but now it is beginning to be diagnosed. This is a subject about which we don't know nearly as much as we thought we did 20 years ago. I might say that excessive amounts of asbestos dust is only enough to constitute a slight haze in the air. The situations in which asbestos is used are highly deserving of competent professional assessment.

Moderator: How can unions get such professional assessment in cases where they feel the plant hygienist or medical personnel are not competent?

Dr. Van Atta: There are several highly qualified physicians in the country who will act as consultants. Also, some state labor departments have personnel who can monitor asbestos operations and render opinions.

(Comment from the floor)—*Dr. Van Atta,* you mentioned you can't get compensation for asbestos disabilities in most jurisdictions.

The law has changed in most jurisdictions in the country during the last few years so that you may be able to sue the construction company, the architects, and engineers who built the plant without proper ventilation. This can be considered for full recovery for the wrongful death of a worker or for injuries. This is a very important new area of protection for workers, not only to get damages where there has been disability but to prevent the continuation of the condition in the future.

Moderator: What services or aid should be given or offered to local unions from the safety staff of an international union?

Mr. Burch: The safety director should develop training programs, or at least outlines, for use by local union safety personnel. He should supply materials (posters, decals, technical data, etc.) and act as a research consultant in safety and health matters. He should answer questions received via letter or telephone. He should gather statistics, which requires the cooperation of local unions.

The international union safety director should represent his union members and the trade union movement as a whole, on the various committees that write standards and codes which will effect the work of the union's members. The United States of America Standards Institute, the Society of Automotive Engineers, and the Society of Mechanical Engineers are examples of organizations that have these types of committees.

Previously, participation by union representatives has been minimal and we are doing our best to change this situation. This is one of the most important activities that safety personnel of international labor organizations can undertake. There are plenty of openings but labor hasn't sought representation. When labor does become a part of these committees, it has been my experience that labor representatives are welcome and offer valuable contributions.

Now we come to the really important role of the international union safety department and that is top management support. This is very important; however, it is also essential that the man on the job support the safety activities. Too many local unions still offer only lip service to accident prevention. Until local union leadership pushes accident prevention, the man on the job will continue to be unconcerned.

Mr. Whitehouse: Let us not overlook the fact that many international labor organizations do not have a safety director or safety department. For them, the first thing they can do is establish such a department and staff.

(Comment from the floor, by Joseph Leonard)—The Longshoremen's union installed accident prevention activities in the International Union office and made it mandatory that each local should have a safety program. That was four years ago. To this day, I have to carry a bat when I visit the various locals in order to get these fellows moving. I do not believe that the International Union office can do much until the local unions are willing to accept it and support it. In addition, the rank and file members must provide support to their local union officers.

Mr. Kumpel: Our International Union has conducted many safety and compensation clinics throughout the United States and Canada over the past 23 years. We have fairly good success in attracting local union people to attend these clinics for three or four days at a time.

Moderator: Does the District of Columbia have the right to make it's own safety codes through it's appointed commissioners, or are the safety rules of the District enacted by the Congress of the United States?

Mr. Greene: The District, through it's Minimum Wage and Industrial Safety Board, has the right to make safety codes. They handle all of the investigations and conduct the hearings necessary to develop these codes. This privilege comes from Congressional legislation.

Moderator: How do we sell safety to our union members?

Mr. Gold: I believe that you must establish, within your members, a desire. You have to give them a chance to participate in the problems. Let them assist with first aid training and community action. The

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worker must understand how accident prevention will benefit him, personally. You cannot sell just once in a while. Ads for new automobiles do not occur once in a while. They are published continuously. The same continuing sales pitch is necessary to keep a union safety program rolling. You have to work at it.

(Comment from Bob Wilkins)—I feel certain that the only way accident prevention can be effectively sold to union members and their families is through effective demonstrations. Demonstrative presentations stick in a person's mind much longer and are more effective in changing habits and attitudes. Films are one method of demonstrating what can be done to avoid accidents or reduce hazards. Of course, this requires more time in preparing safety presentations and oftentimes costs money.

I am sure that all of you will agree that Jake Gold does an outstanding job of teaching accident prevention to people from all walks of life and you will notice that he uses demonstrations wherever possible.

With reference to the continuing complaint that management cannot get the cooperation of the union or the men when they wish to initiate a certain type of accident prevention program, the primary reason for this difficulty is the fact that management feels that the safety program is not only their responsibility, but that it is their privilege to develop and enforce it as they see fit.

These types of procedures often run into difficulty because most people resist something that is forced upon them. However, most people are willing to cooperate with practically any project or program if they have some voice in the manner in which the project or program is developed.

As an example, if management wants to initiate a safety-spectacle program, it is extremely helpful if they will ask the union to appoint two or three representatives to sit with management and develop the program which will later become mandatory. When this cooperation is enjoyed from beginning to end, the program will always be a success because both parties feel that the program was developed properly, and both parties will cooperatively assist in seeing to it that the program is put into effect.

Regarding the question of what labor can

do about industrial hygiene problems, I believe that if the state labor department or other concerned organizations cannot provide industrial hygiene personnel to study situations believed to be hazardous by the union, then the union should have the opportunity to hire its own consulting industrial hygienist to study the situation and give an unbiased report. This should satisfy the desires of the union membership and should assist in avoiding hazardous situations which may be overlooked by management.

(Comment from the floor by Mr. Philo)—If you don't mind, I would like to say something in general about a problem we, as lawyers, have in representing injured people. I have been interested in one very important area of safety and I refer to suits against manufacturers of machinery or safety equipment that result in an injury to a worker. Our position is not aided by the existence of weak standards and weak positions by local and international unions.

In particular, I have during the past year presented cases of 37 workers who have lost hands in power presses. I have just spent some time in the Power Press and Forging Section sessions, listening to speakers on points of operation guarding. It is my opinion that about 50,000 presses in the United States are guarded by a trap instead of a safety device. These are the pull-back guards. I think it is predictable that a worker who operates a press equipped with these pull-back devices for 30 years is bound to lose a hand. I represent some clients who have lost both hands.

I don't believe that the National Safety Council is ever going to suggest that the pull-back devices are unsafe. This is probably because the Power Press and Forgings Section basically represents industry and management. However, the unions can and should do something about this situation. They ought to get these devices banned in every state in the country. The pull-back devices violate the two principles of power press safety. First, every device or guard must have a fail safe mechanism; second, the worker's hands should never be placed between the dies when the machine is running.

General Motors, Ford, and Chrysler will not use these pull-back devices on any of their thousands of presses. They recognize

they are a trap. It is the smaller shops which do not have effective accident prevention engineering in the plant, where these devices exist.

I recently talked to a corporate safety director who I thought, should know better. However, his company is being advertised as having pull-back type guards on power presses in several of its plants. The corporate safety director admitted this was true. He went on to say that this type of device was used in some plants because the local union insisted on the pull-back devices.

I believe that the local union safety personnel were undoubtedly good, conscientious safety people but were not safety sophisticated. This point of operation guarding is a complex problem.

Dr. Van Atta: What Mr. Philo says is perfectly true. Fail safe design is particularly important when you're talking about power presses. It is true that there is no failure of a pull-back device which is a

safe failure. Every conceivable failure is a hazardous failure.

(Comment from the floor)—I disagree with the idea of including industrial hygiene services in a union contract. I am with the State Labor Department of Iowa and am director of the industrial inspectors. We have one of the finest industrial hygiene laboratories in the United States. What we really need is support from the unions at the state level when it comes to budget time. The State Bureau of Labor doesn't receive the support from the unions when it comes time for requesting monies to provide adequate factory inspection and industrial hygiene survey work. The Manufacturers Association are there and they lobby against our budget continuously. Our Safety Commission is currently operating on a budget of \$16,000. We asked for \$39,000. The point is that the state has the facilities in adequate equipment and laboratories. But we need more support from labor.

Administration of Industrial Safety Laws

WHAT WE NOW DO FOR INDUSTRIAL SAFETY

SAFETY AND RELATED ASSOCIATIONS

By W. G. JOHNSON

General Manager, National Safety Council

The American Society of Safety Engineers,* with its 7,700 members and 84 chapters, provides a strong resource for administrators of industrial safety laws. The members of ASSE are available for service on advisory committees and code drafting committees. The *Journal* of the ASSE is a valuable technical resource for the staffs of state labor departments.

The U.S.A. Standards Institute* (formerly the American Standards Association) provides many safety standards which can serve as models for drafting state codes.

The Industrial Hygiene Association* provides a wealth of technical information, as well as standards. The same is true of the National Fire Protection Association.*

The standards and system of approvals of certain kinds of equipment by Underwriters Laboratories* is also helpful in the administration of industrial safety laws.

Many trade associations provide technical recommendations for the handling of their products. Examples would be the American Petroleum Institute* and the Manufacturing Chemists Association.* It is very difficult in this space to list all such resources. If you encounter a problem in the handling of a

particular product or material, write to the National Safety Council and our staff will direct you to useful material.

The National Safety Council's services to occupational safety can be categorized as follows:

1. *Research and Fact-Finding*; 2. *Exchange of Information*; 3. *Standards and Recommendations*; 4. *Training*; 5. *Technical Assistance*; 6. *Program Aids*; 7. *Measurement of Performance*; 8. *Recognition*.

The Industrial Conference includes the following sections: Aerospace, Air Transport, Automotive and Machine Shop, Cement, Quarry and Mineral Aggregates, Chemical, Coal Mining, Construction, Electrical equipment, Fertilizer, Food and Beverage, Glass and Ceramics, Hospital Safety Service, Marine, Meat Packing, Tanning and Leather Products, Metals, Mining, Petroleum, Power Press and Forging, Printing and Publishing, Public Employee, Public Utilities, Pulp and Paper, Railroad, Rubber and Plastics, Textile, Trades and Services, and Wood Products.

The Motor Transportation Conference includes the Commercial Vehicle, School Transportation, and Transit Sections. The school and college conference includes the Safety Education Supervisors, Driver Education, Elementary School, and Higher Education sections.

Other conferences in the National Safety Council structure are the Labor Conference, Farm Conference, Women's Conference, Religious Leaders Conference, Traffic Conference, Public Conference, Youth Conference, Public Information Conference, and Chapter Conference.

RESEARCH AND FACT-FINDING

Research Services include Research Correlation, Research Critique, Research Methodology, and Research Retrieval.

*American Society of Safety Engineers
5 North Wabash
Chicago, Illinois 60602

U.S.A. Standards Institute
10 East 40th Street
New York, New York 10016

American Industrial Hygiene Association
14125 Prevost
Detroit, Michigan 48227

National Fire Protection Association
60 Batterymarch Street
Boston, Massachusetts 02110

Underwriters Laboratories
207 East Ohio
Chicago, Illinois 60611

American Petroleum Institute
1271 Avenue of the Americas
New York, New York 10020

Manufacturing Chemists Association
1825 Connecticut Avenue
Washington, D. C. 20009

Exploratory Grants have been assigned for Relationship of Fleet Safety Programs to Accident Frequency Rates, Variables Covering Safety Poster Effectiveness, Analysis of Expert Opinions Regarding Industrial Safety Programs, Evaluation of Defensive Driving Course, and Prediction of Individual Accident Liability with an Inventory Measuring Risk Taking Tendency.

Also the Research Department is working on High Threat Safety Posters in Industry, and Slow Moving Farm Vehicle Emblem.

Statistical Services provide *Accident Facts*, Industry Injury Rates, Motor Transportation Accident Rates, and Special Studies.

Sectional Surveys include in Pulp and Paper—Most Prevalent Physical Hazards in the Paper Industry, and Training; in Wood Products—Protective Equipment for Chain Saws; in Public Utilities — Aerial Basket Accident Surveys, and Helicopters; and in Mining—Training Materials.

Library Services. The National Safety Council maintains the world's largest safety library, which is preparing for mechanized information retrieval.

EXCHANGE OF INFORMATION

National Safety News—circulation, 39,800
Traffic Safety Magazine — circulation, 17,700

Farm Safety Review—circulation, 17,500

Newsletters

30 Industrial Sections—circulations from 750 to 4,600

Motor Transportation—circulation, 9,000

Labor—circulation, 2,000

College and University—circulation, 2,550

Trade Associations—circulation, 750

The National Safety Congress attracts 13,000 delegates to more than 250 sessions and meetings—more than 150 of which are devoted to industrial and motor transportation subjects.

Transactions of the National Safety Congress are published in 28 volumes.

Symposium — Measurement of Industrial Safety Performance

Conference and Section Meetings

Participation in State and Local Conferences

National Directory of Safety Films

STANDARDS AND RECOMMENDATIONS

Accident Prevention Manual for Industrial Operations

Handbook of Accident Prevention for Business and Industry

Safety Guide for Unions

Motor Fleet Safety Manual

Supervisors Safety Manual

Data Sheets (more than 350—covering everything from abrasives to zirconium)

Special Industry Manuals cover Power Press, Forging, Quarry Operations, Graphic Arts Industry, Office Safety, Hospital Safety, Operating Ambulance Fleets, Guards Illustrated, and Safety Devices for Metal-working Industry.

The National Safety Council cooperates with *U.S.A. Standards Institute* as sponsors or co-sponsors of 24 safety standards, and participates in development of 66 other safety standards; cooperates with *National Fire Protection Association*; cooperates with *American Society for Testing Materials*; cooperates with *Underwriters Laboratories*.

TRAINING

Fundamentals of Industrial Safety is offered in six courses per year—with over 5,000 graduates to date.

Advanced Safety Management is offered in four courses per year; and *Hygiene* in two courses per year.

Home Study Courses are offered for:

	Total to Date	Current
Industrial Supervisors	6,322	1,186 active
Labor Leaders (new)	75	75
Motor Fleet Supervisors (on the drawing boards)		

Special Industries Courses include Fertilizer and Public Utilities.

Consultation and participation in state and local courses is provided.

TECHNICAL ASSISTANCE

Consultation:

15,000 correspondence inquiries per year

Quickie experience checks on special problems in special industries

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Missionary work with trade associations to reach small business; Surveys, Committees, Programs.

PROGRAM AIDS

Supervisor Training includes Industrial Supervisor magazine with a circulation of 206,000; films, talks, pamphlets, data sheets, STEP program, and accident case studies.

Records forms.

Vocational school checklists.

Employee Training material includes Safe Worker magazine—circulation, 446,000; Safe Driver magazine—circulation, 609,000; posters, booklets, banners, incentives, films, and slides.

Farm Guides and the SMV Emblem promotion are continuing activities.

RECOGNITION OF PERFORMANCE

Industrial (1965)—462 Awards of Honor; 1,081 Awards of Merit; 1,187 Certificates of Commendation; 928 President's Letters, 1,000 Section Contest Winners and 5 Distinguished Service to Safety Award Winners.

Labor presents 15 awards, College and University 7 awards, and Farm Safety 19 awards.

Motor Fleet recognition includes 411 awards to fleets, and 211,000 awards to drivers.

FEDERAL PERSPECTIVE AND POLICY

By ROBERT D. GIDEL

Dir. Office of Occupational Safety, Bureau of Labor Standards,
U. S. Dept. of Labor, Washington, D. C.

The Bureau of Labor Standards has 26 field offices, seven regions and 200-plus staff personnel.

We have seven operating programs based on legal authority plus research and development, publications development, training and promotional programs.

We have three major areas of responsibility: regulatory functions, safety services and consultation and research and development.

We provide safety program consultation, safety training, inspections and investigations, technical assistance, clearinghouse of information, codes, laws, etc., special industry surveys, legislative assistance and communications aids.

We provide services for state labor agencies, unions, federal agencies, industry we regulate, educational institutions, municipalities, students, individuals and international groups.

We have seven operating programs administering safety provisions of the

- 1—Longshoremens' and Harbor Workers' Compensation Act
- 2—Public Contracts Act
- 3—Federal Employees' Compensation Act
- 4—Fair Labor Standards Act
- 5—Service Contracts Act

6—Arts and Humanities Act

7—Vocational Rehabilitation Act

8—Presidential Executive Order 10990.

Here we separate theory from practice—it is estimated that 30 to 35 million workers could be reached by these laws.

As an example of the success in applying the theories we urge labor and management to follow, in 1960 the longshore injury frequency rate (IFR) was 131.8. In 1965 it was 86.9, a reduction of 34 per cent.

In 1960 the shipyard rate (IFR) was 39.3. In 1965 it was 25.9, another 30 per cent plus improvement.

We don't claim credit for this. It was accomplished by a lot of hard work, dedication and cooperation by labor and management.

To help accomplish this improvement, we, in 1965, inspected 23,300 ships, trained 20,400 workers, and consulted with management on programs 10,300 times — among other things.

We also have these other programs. In federal safety we made 237 consultative surveys, trained 3445 workers, helped 79 field councils with programs, provided secretariat for 100 field councils, and participated in 175 meetings and 11 conferences, to help provide safety for federal employees.

A major safety program in the federal government now is Mission Safety 70. This was initiated two years ago by the President. The goal is to reduce the incidence of injuries and their costs 30 per cent by 1970. The base year 1963 IFR was 7.9. Last year it was reduced to 7.3. We are shooting for 5.6 in 1970.

Another operating program is with state safety organizations. Last year we conducted 18 state safety inspector courses, conducted 15 construction industry cooperative courses, conducted five state employee safety programs, made 170 consultative and promotional contacts with states, and helped develop three special industry programs.

Another key program is with unions. We work with every level of organized labor in safety promotion and education—from the AFL-CIO headquarters to the local bodies.

We trained 1341 through formal courses, and reached 6875 through presentations in union halls and at meetings. We made 562 promotional contacts with labor officials to stimulate safety activities.

The Secretary of Labor recently consolidated all safety authorities of the U. S. Department of Labor in the Bureau of Labor Standards.

We are now studying how best to administer the safety requirements of the Public Contracts Act, Service Contracts Act, Arts and Humanities Act and Vocational Rehabilitation Act.

We will have to wait till next year to report on our results and actions concerning them, as we have on the other programs.

To back up our operating, training and promotional programs we also have a research and development arm. This involves individual program materials development, plus work with USA Standards Institute, NFPA, Federal Radiation Council, and many others.

A special project is our code comparison studies. We compare safety provisions in state safety laws with the American Safety Standard on the subject. To date, we have made 20 such studies and the comparison documents are available to all interested parties.

Many people and organizations contact us for help on technical safety problems as well as safety programming.

To handle these requests we have a clearinghouse service. We have a complete state safety law library. We develop abstracts on key standards, laws and regulations. We have a comprehensive technical library, and we maintain constant liaison with various experts and groups who might help come up with the right answers to difficult problems.

We have a whole series of training courses, sessions and institutes we provide for states, labor and industry subject to our regulatory authority.

Major courses cover safety organization and administration, mechanical and physical hazards, chemical and environmental hazards, low voltage electricity, construction safety, radiation and industrial hygiene, and Safety Trainers Institute.

To back up our training, educational and promotional activities, we develop and use slide sets, movies, exhibits, demonstrations, technical bulletins, instructor outline texts and others. Most of our key publications and other aids can be purchased through the Government Printing Office and other sources.

On the national developmental and promotional scene:

- 1—We serve on 52 committees of U.S.A. Standards Institute
- 2—On the nuclear construction and safety standards boards
- 3—Several NSC sections and conferences
- 4—Federal interagency committees on fire, motor vehicle, atomic energy, highway, occupational and off-the-job safety standards
- 5—We provide secretariat and technical backup for the President's Conference on Occupational Safety.

On the international scene, we:

- 1—Prepare U.S. government position papers regularly on ILO conference subjects
- 2—Have participated on committees in Geneva and other foreign places on such subjects as manual weight lifting standards, industrial hygiene in industry, chemicals, machine guarding, shipbuilding, and others.
- 3—Provide staff and backup for certain international trade fairs — Poland, Czechoslovakia and elsewhere.

STATE PERSPECTIVE AND POLICY

By ERNEST B. WEBB

Director, Department of Industrial Relations, State of California
(Delivered by George Sherman)

For any state to achieve significant progress in reducing the toll of industrial injury and death, the perspective and policy of that state must, in my opinion, include three fundamentals.

1. The enactment of enabling legislation that permits the state agency having jurisdiction over industrial safety to prepare safety regulations *without delay*, once it believes there is a need for them.

2. The compilation, tabulation, and analysis of all disabling work injuries in that state.

3. Clear and unmistakable evidence that the governor and legislature of the state are firmly and fully committed to the policy of securing safety in places of employment.

California has long recognized the importance of these three fundamentals and, what is more important, has *observed* them. That recognition and observance have largely contributed to the decline in California's work injury rate last year to its lowest level in history. (31.3 injuries per 1,000 workers.)

Technological advances today are at an increasingly rapid and dizzy pace, far greater than was imagined even as little as thirty years ago. For this reason, it would be quite impossible for any legislature itself, in addition to its many other duties, to cope immediately with new hazards presented by new machines, new processes, and, occasionally, even new industries as they are introduced.

The solution is enabling legislation that leaves control of such hazards to an effective state agency having competent, well-trained safety engineering personnel—men with not only a sound background in their field but whose full-time job is industrial safety.

Enabling legislation should be general in scope, and not confined to specific hazards or specific measures. It should give full authority to the safety agency concerned to prepare safety regulations as and when it deems them necessary. Those regulations should have the force and effect of law.

Of course, safety regulations should be prepared under thoroughly democratic procedures (as is the case in California) and not by mere fiat, if they are to receive the support of both management and labor. Endless safety disputes between these two great segments of industry will be avoided if both groups feel that the standards created provide necessary and reasonable safety. I say "reasonable," because we know that absolute safety does not exist and that progress of any nature is usually attended by some risk.

I need hardly add that a state safety agency of continuing competency is possible only under an adequate civil service system, with safety engineering personnel appointed from eligible lists established after open competitive examinations.

The second fundamental—the compilation, tabulation, and analysis of *all* disabling work injuries—is necessary to pinpoint precisely where major injury prevention efforts might well be directed.

The analysis might disclose that a specific industry, or an area within that industry, needs greater attention. Or, it might show that specific accident types are the villain.

In California, for instance, statistics reveal an illuminating and unchanging pattern during the last twenty or more years that we have been able to prepare comprehensive work injury statistics. Three out of every four work injuries are caused by three accident types: falls and slips; strain or overexertion; and striking against objects or being struck by them.

As for the third fundamental, it is a truism that safety must have actual top level sponsorship if it is to enlist the respect and support of all other levels, including the rank and file.

Nothing is more valuable than consistent action by a state's governor and legislature proving their profound concern for on-the-job safety. That concern provides an industrial safety climate that will affect every aspect of our society for the better.

THE EMPLOYER

By M. F. BIANCARDI

Manager, Safety and Workmen's Compensation Services,
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

What is industry doing about the administration of safety laws?

First and foremost, industry complies with these laws and regulations. I'm sure everyone has heard the statistics from various states that say only one, two, or three percent of the compensable injuries involve violations of regulations.

Second, industry is assisting in bringing about overall compliance with the laws—by organized self-education and inspection and exchange of information conducted through local and state safety councils, business associations, etc. Most of these efforts involve participation by government officials who, in these situations, act as consultants and advisors rather than enforcers.

Third, fortunately, in our democratic system, industry has the opportunity to help develop the rules by which it is going to operate. Thus, it participates in advisory committees, on technical boards, and in public hearings, taking either a leadership or assistance role in the development of safety regulations.

Fourth, industry provides manpower, money, and technical knowledge to voluntarily develop recommended standards of safety through various organizations — NFPA, ASA, API, MCA, NSC, etc. These voluntary standards are the "sky hook" on which government regulations often "hang their hats."

I'm not looking for bouquets for industry. What industry is doing is no more than it *should* be doing in our kind of society. But I think that sometimes we take these activities for granted, or even demand them; industry not only has a responsibility in this area, but is meeting it, too.

But, are we doing enough? The pat answer is "no"—just as I think it is for every group represented here. The minute any one of us says, "yes," progress will be hampered. I suggest that we not only continue to improve the regulations we have but also look for new ways to do this job. In this respect, I recommend that we give serious thought to the use of overall safety performance measures and performance type rules.

THE WORKER

By J. GEORGE EICHHORN

Grand Lodge Representative, International Association of
Machinists and Aerospace Workers

What We Now Do For Industrial Safety.

What the organized union worker is doing for the furtherance of industrial safety is primarily what he has always done, but bigger and better in the past eleven years; namely, we are the devil's advocate and as such we are constantly negotiating and working for better safety and health legislation.

With the merging of the A.F. of L. and C.I.O. eleven years ago, we came out with a very strong policy on these matters, and we have a proven record of achievement to show for it. Almost simultaneously, labor got its own Conference in the National

Safety Council, and we have steadily grown from a zero membership to almost 600 in number.

The worker, through his union, has spent many hours in various legislative halls seeking constant improvement—getting enabling acts and pushing for the necessary money to improve safety departments and factory inspectors at all levels of government.

The worker is pushing his parent unions for strong constitutional language on safety, health, and workmen's compensation. He is pushing his parent unions for fully staffed safety and health departments at staff level

to handle only these problems. He more and more is pushing his representative negotiators for better contract clauses and better equipped in-plant safety representatives.

He seeks time for discussion of safety and safety education at union meetings and union sponsored leadership schools. He insists on his city and state central bodies committing themselves to safety programs.

He runs for public offices on school boards and park boards where he can influence the safety programs of the schools, playgrounds, parks, beaches, etc. He recognizes that every time a non-mechanical accident occurs, a human failure has occurred and that human failure was, in large part, shaped by the attitude of the worker.

Last, but not least, he is learning to be the backbone for strict and fair enforcement of laws that enhance good safety.

What More Can We Do About It?

Nobody goes to work in the morning expecting or waiting to be injured during the day. I doubt if any of the almost 700 persons killed in the recent Labor Day slaughter left their homes expecting to die. Our experience indicates that the major problem in safety is heeding accident prevention advice. "It can't happen to me". While most of the time we get away with feeling that "It can't happen to me", the statistics grimly point out that we can't afford the luxury of such an attitude. Labor is going to have to

do even more to make every worker understand "It *can* happen to me".

We must build attitudes in our places of work to consciously avoid accidents. First, by making the worker a part of every accident prevention program and, second, by doing away with the one-way system where the employer unilaterally makes the rules and operates the entire safety program. The only success we have known is with two-way program.

We can work harder. We must bring more people into the main stream of the needs outlined in my earlier remarks. We must work for realism in safety — not flowery speeches. We must work constantly to have an understanding by the worker of just what it means for him to work and live safely. We must desist from using posters, slogans, gimmicks, and contests for getting good and lasting results from safety programs. We must work hard to keep our employers from giving us contests, posters, slogans and gimmicks in lieu of sound industrial safety programs. We must enter into all safety programs with the basic knowledge that if the safety program is to succeed, it is a never ending job. Finally, we must continue to push to get money from government, spent on industrial safety in amounts equal to, not less than, the government's programs for conservation departments, agricultural departments, and animal husbandry.

THE INSURER

By COLE A. ALLEN

Vice President, Engineering, American Mutual Liability Insurance Co.,
Wakefield, Mass.

The insurance industry, particularly the casualty and property underwriters, has always been in the vanguard of industrial safety.

The industry has built an incentive to good safety performance into the workmen's compensation pricing structure by means of experience rating and retrospective rating plans. These are sort of double edge swords that cut both ways. On the one hand, they enable a policyholder to achieve worthwhile

reductions in insurance costs to the extent that he is able to control his accident experience. On the other hand, they penalize him pricewise if he does not.

What the insurer does for industrial safety falls into three broad groupings:

1. Direct help to individual policyholders in the technical and administrative features of industrial accident control.
2. Research on industrial health and safety problems.

3. Promotion of industrial safety as a broad national movement.

We should be mindful that this help is directed not solely to the workmen's compensation interests of the insurer. Much of the safety work that is performed by insurers of property and general liability such as fire exposures, pressure vessels, and elevators, is an important contribution to industrial safety.

The attainment of any effective level of safety performance requires considerably more than the existence of industrial safety laws, irrespective of how well they are enforced and implemented. Similar to nationally accepted voluntary safety standards and fire codes, industrial safety laws (to the degree that they are complete) provide a credible index to the conditions that should prevail if a good standard of physical and mechanical safeguarding is to be attained. This is supremely important, because a physically safe and healthy work environment is an essential element of any effective industrial safety effort. However, the insurer is ordinarily disposed to treat the total problem, and deviations from safety codes, rules, regulations, etc., are invariably symptoms of the real problem rather than the problem itself. It is this factor that accounts for the wide range of activity of insurers in helping their policyholders reach increasingly higher standards of performance in industrial safety.

Let us examine the first category: "Direct help to the individual policyholders for both occupational injury and health impairments." This is where the bulk of the effective help is given. Most of the insurers make available a safety advisory service to their policyholders. Ordinarily, this provides for personal visits to policyholder sites by trained safety technicians. These people evaluate equipment, process, material, and production methods with respect to inherent hazards and their controls and consult with management on their findings. Competent knowledge of applicable safety codes and standards is indispensable. Such work is often backed up by testing and analytical laboratories which permit more exacting studies of complex problems, especially those where chemical or mechanical exploration is warranted. An important supplement to this personalized service is the

voluminous array of safety educational and motivational material that is available to the industry for use by management, supervisors, and the rank and file workers.

The scope of the services varies among insurers. Some are safety inspector oriented; others take on a broader role and are management consultant oriented. There is a trend toward the latter role. The range of activities can be described as follows:

1. Advice to industrial management in developing and promulgating the safety policy and program best suited to the needs of the establishment.

2. Advice to management in planning, organizing, and controlling the accident prevention function so that it is built into the system that management normally uses to discharge its operating responsibilities.

3. Help to management in establishing and maintaining a physically and mechanically safe and healthy work environment by surveying premises, equipment, process material, and production processes, advising management on important deviations from accepted safety codes and standards and the most effective corrective measures to be taken.

4. Help to management in establishing and maintaining safe work methods by observing worker practice, advising management on deviations from safe behavior patterns and methods for effecting improvement.

5. Advise management on the safety codes and standards that apply to the operations, assist them to procure the material and to use it as the basis of establishing a safe working environment.

6. Help management incorporate scheduled safety inspections as routine operating function, and assist in the training of qualified safety inspectors.

7. Help management develop a strong supervisory safety function by advising them on the appropriate assignment of safety responsibilities to supervisors and assisting management, through supervisory training programs, to develop the skills of supervisors in carrying out their safety assignments.

8. Help management in job safety analysis techniques to be used as a basis for hazard identification and control, and the job training of workers.

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9. Help management organize the plant maintenance function so that it may bring maximum value to the accident prevention program.

10. Help management organize its procedures for the selection, placement, and job training of workers so that a physically limited or untrained worker is not placed on a job that is dangerous to himself or his associates.

11. Help management train and motivate the work force in accident prevention by providing safety educational and motivational literature, pamphlets, posters, films, and other visual aids.

12. Help management institute an effective accident investigation system and assist in training supervisory people in the techniques of investigating accidents and correcting causes.

13. Help management establish and utilize a system of accident record compilation as a basis for measuring performance and planning programs.

14. Help management establish and maintain effective first aid and medical facilities.

15. Conduct a system of scheduled audits of the several elements of the policyholders safety program so that management may be furnished with expert advice on program status and effectiveness.

16. Serve as speakers, lecturers, instructors, at policyholder safety rallies, training courses, and safety meetings.

17. Furnish statistical compilations from the insurer's records that will aid the policyholder in evaluating his own program and in planning program activities.

18. Undertake research on specific safety problems of policyholders that do not lend themselves to solution by existing knowledge.

Behind all this effort with the individual policyholder is the simple philosophy that efficient management prevents accidents. It is logical that an important role of the insurer is to promote managerial effectiveness. The major thrust at the outset is to get management to accept the fact that acci-

dents don't have to happen. Once that is accomplished, the insurer tells management how to prevent them and then convinces him to do something about them.

The second category of help to industrial safety is "Research on industrial health and safety problems." Some of this is conducted in research laboratories operated by a number of insurers, and some is sponsored research that is contracted to outside research facilities. While much of this laboratory work is related to specific policyholder service work and is intended to pinpoint hazards that cannot otherwise be determined accurately, a substantial portion is pure research on broad safety problems that effect industry. Much of this is in the explosion, fire, and occupational health fields. In general, the activity involves:

1. Explosibility determinations of dusts and vapors.

2. Flash point determinations.

3. Quantitative and qualitative analysis of suspected atmospheric contaminants, dusts, vapors, fumes, and mists.

4. Quantitative and qualitative analysis of suspected toxic chemicals and compounds.

5. Machine studies to design improved safeguards.

The third category refers to the activities of the insurer in "The promotion of industrial safety on a broad national front." This describes the extensive participation of the insurers both in the financial support of, and the assignment of personnel to, national and local safety council activities, employers and trade associations, standards development bodies, professional societies, and other groups which have an interest in, and a contribution to make to, industrial safety. Insurance people can be found taking active roles in the promotion of the objectives of those various organizations.

What the insurer is doing for industrial safety lends itself to pretty large dimensions. It is probably a major factor in the progress that industrial safety has made and is continuing to make.

WHAT SHOULD BE DONE?

By HOWARD PYLE
President, National Safety Council

This subject has a very familiar ring to me. At another stage in my life, the answer to what should be done was almost invariably—*there ought to be a law*.

No matter what the problem was, the popular notion was that the enactment of a law would fix it. The longer I worked and lived with this concept, the more I learned how often it was that laws, or enabling, already in place, had either been punched so full of holes, or had been so sorely neglected, that they weren't very effective any more.

So, when a new law was passed to do something that needed to be done, it was very often a case of patching, or plugging, a law that wasn't doing what it should have been doing.

The moral of this piece of business is not to suggest that we need more law or regulation, but to raise the question—"What should be done that could be done if we were only doing what we should be doing?"

You are familiar with the areas of influence and responsibility of those who are participating in this presentation.

What an avalanche of action could be turned on if every source of strength identified here this afternoon were turned on. I'm not thinking about the new things we might all tackle, but just the things we are already enabled and qualified to do.

When Green Bay Packer Jim Taylor turns in his best performance, it's called a second, third and fourth effort at doing *what should be done*. It's what he is paid to do and the fact that he does it and does it so consistently and so well makes *him* a star and the Packers one of the winningest teams in the history of football.

Speaking for the National Safety Council, we are probably reaching 20 million workers—half of them very well—the other half not as well as we could and should. In the process, we point with pride to the fact that among our members, accident-frequency rates are 73 per cent better than for non-members. Still, the facts show that more

than 60 per cent of the industries rated have worse records than they had ten years ago.

In contrast, the gas utilities industry with a frequency rate of more than 22 some 20 years ago—and 8.6 ten years ago—had a 5.7 in 1965. There are others who are also turning in Jim Taylor type performances, but not enough of them, or the Vice President of our Industrial Conference, H. S. McFarland, would have had no cause to say in the Conference Report for 1966, "In the last ten years both frequency and severity rates have remained almost constant." As a matter of record, the all-industry rate has actually crept up a little in the last three years.

I know the general subject of this afternoon's session is "Administration of Industrial Safety Laws" and that my time is meant to deal with *what should be done?*

In approaching it as I have, my intention has been to emphasize for all of us the nature of the gap between *what we now do for industrial safety* and *what more can we do about it?*

My contention is that this gap is full of opportunity for our own organization and the many multipliers with which we work. For government at all levels along with the employer, the worker and the insurer—the potential is tremendous.

I would be the last to say there are no differences among us as to how maximum safety for the worker should be accomplished. As debaters, we might never agree altogether. No matter, there has to be enough honest good will among us and a sufficient mutual concern for the safety of the worker, that we can cooperate fully in the administration of industrial safety laws, while we do our utmost to avoid the necessity for more and more of the idea that there ought to be a law.

High voluntary performance standards for the protection of the worker wherever he is employed is a big assignment, but in its achievement more could be done for indus-

trial safety than by any other means. To make it possible, all of us must make it easier and easier and more and more desirable for employers everywhere to set up sound safety programs and thus learn how

to make it pay important dividends.

I respectfully submit these observations as my answer to the question, "What should be done" to better serve the Administration of Industrial Safety Laws.

WHAT MORE CAN WE DO ABOUT IT?

FEDERAL GOVERNMENT

By NELSON M. BORTZ

Director, Bureau of Labor Standards, U.S. Dept. of Labor, Washington, D. C.

The swift pace of technology; the spate of new and exotic chemicals and materials; the steady spread of industry from highly industrialized areas to the countryside; the tendency for large and merging corporations to operate geographically dispersed plants; the speed of our transportation and communication systems and the pervasiveness of expanding environmental hazards, of air and water pollution—these are only some of the aspects of living, working, and administering programs intended to protect the lives and livelihood of today's and tomorrow's Americans.

The mastery of these changes and challenges commands our attention. It calls for a reassessment and reappraisal of the ability of our conventional, institutional forces—whether industry, labor, state or Federal government—to deal quickly, sensibly, and consistently with safety and health problems.

The present widespread concern over safety matters calls for a far greater degree of adaptability, response, and readiness than in pre-World War II days or, indeed, in the decade following the war when the wartime technological breakthroughs had not yet been fully assimilated by our industrial economy. Meanwhile, the second and third generations of technological change, in successively shorter gestation periods, have spawned ever more prolific and amazing offspring from the marriage of science to industry.

The central question now before us as administrators is whether, within our industrial and political framework and our sometimes exaggerated emphasis upon pre-

rogatives and "rights," we can marshal our collective resources and responsibilities not only to catch up but also keep pace with the accelerating tempo of material change in what is sometimes called the "hard" sciences.

If we are to achieve even moderate success, we must move forthrightly and faster along the four avenues of *comprehension, cooperation, coordination, and compliance*.

We must comprehend the thrust of technological change and the accompanying need for social adjustment more rapidly than in the past. Whether it is the toxicity of a new chemical, the pace of automated processes, or the industrial use of nuclear energy we cannot await the casual course of empirical cause and effect to see whether it is safe or not. More research, before and not after the accident, is required.

This means we must cooperate not only to identify threats to the health and safety of workers but also to take joint measures to provide suitable protective arrangements and standards. It means specifically (a) the development of safety standards covering new hazards and processes promptly, thoroughly, without reservation and with broadly-based participation, and (b) the timely revision of many so-called national standards whose age unmasks their obsolescence.

Next, there must be realistic, active coordination of our separate but mutual interests. This involves the willingness and ability of industry, labor, and safety-oriented groups to work together and to work with government agencies, state and Federal. By the same token, government authorities must

not only work with those in the private sector but also among themselves at the local, state or Federal level. In some rational and viable manner the respective roles, responsibilities, and resources of Federal and state safety agencies must mesh more smoothly in the accident prevention area.

Finally, whether the standards and safeguards are those specified by private arrangements, such as industry codes or collective bargaining contracts, or by legal instruments, compliance becomes the essence of safety. As a nation, we are a unique admixture of private and public government. The most successful and effective observance of the rules of the game is based upon participation, understanding, and acceptance by the parties involved. This has been amply demonstrated, both positively and negatively in our safety efforts whether in the plant, the state or nationally. The task ahead is to seek that degree of compliance which serves neither narrow nor selfish employer, union, or government predilections but rather the public good, broadly conceived.

Thus, the future course is clear:

We must *comprehend* change and by research and study anticipate its safety implications.

We must *cooperate* wholeheartedly in the development of adequate, modern safety codes.

We must *coordinate* our efforts and jurisdictions to maximize our work and influence.

We must seek the spirit and substance of *compliance* not in a narrow, selfish or technical sense but in terms of expanding national safety needs and services.

These are administrative problems. They involve bringing people, points of view, and proposals together for action. They call for leadership. In all likelihood, they call for greater governmental involvement at both the state and national level. They call for exploration of the most effective "mix" of Federal and state capacities. They also call for the constructive support by the private safety community in terms of progressive legislation, adequate budgets, and competency of staff free from a political spoils systems and unfair pressures in their enforcement activities.

STATE GOVERNMENT

By CARL J. MATTEI

Director, Division of Industrial Safety Services, State of New York

Most states which have safety divisions are legislatively charged with the responsibility of making inspections and enforcing safety standards for the purpose of accident prevention. In this area of responsibility they do a most effective job. In addition to accident prevention programs conducted by the states, there are usually programs conducted within the state by many private organizations which are also engaged in accident prevention. These private organizations include, but are not necessarily limited to, local chapters of the National Safety Council, the American Society of Safety Engineers, organized labor, trade groups and insurance companies. All of these non-governmental organizations operate more or less independently of one another.

I am of the opinion that states should take the initiative and attempt to weld all

of the efforts of these various groups into one strong force. I feel that cooperation between the state and these various groups, all of which have a common concern in occupational safety, would lead to a more impressive record in accident frequency reduction. In order to achieve this need for a joint effort, I suggest as a first step the forming of a committee comprised of members of these groups. This committee would distribute information on safe working conditions and practices, exchange information on causes and circumstances of accidents, and plan statewide safety seminars. I have only mentioned a few of the many possible functions of this standing committee. I am sure, however, that as time progressed more and more gain to the state could be expected from such a committee.

The area of education for accident pre-

vention, although usually part of the accident prevention program in many states, has not received sufficient attention in spite of the fact that all safety experts agree that education is the most effective means of achieving success in accident prevention. Most states attempt to combine educational programs with their enforcement programs. I believe that this method is ineffective for the reason that a safety representative who enters an establishment for the prime purpose of enforcement cannot hope to secure management cooperation, which is one of the essential factors in any educational program. I, therefore, recommend that state government provide a separate and distinct organization of highly skilled and competent personnel whose responsibilities would be strictly limited to developing educational programs. These programs could be either on an industry or on an individual establishment basis. Labor and management group participation should be solicited in such a program.

Good safety statistics are most necessary in order to properly administer a state safety program. In spite of this, the statistics available to the administrator of a state safety program are usually limited. Because of limitations of funds, state safety divisions, as a general rule, must practice selectivity in their inspection procedures in order to utilize their staff inspectors in a most efficient manner. In order to assign staff in a selective inspection it becomes necessary,

therefore, that information be made available to the administrator, concerning all establishments and industries which have above national or state average accident frequency rates.

The administrator of a state safety program should also have available to him information relating to accident causes for planning purposes, I propose, therefore, that state safety divisions review the available statistical information and expand the service where it is found lacking.

Although many research projects have been undertaken in connection with traffic and automobile safety, to the best of my knowledge no such research projects have been undertaken by states in the area of industrial safety. In this connection I propose that state government should either conduct their own research programs and studies or make available to research organizations, or to universities, funds for the purpose of conducting such research.

In recent years, a great deal of emphasis has been placed upon vocational training, for the reason that manpower shortages exist in the skilled trades. Vocational training schools and apprentice training programs have been utilized as part of the program for providing these skills. The curriculum used in training individuals in these programs contain little or no material on safety. This matter should be of great concern to state government and should be reviewed.

THE EMPLOYER

By WALTER F. PATENGE

President, Wohler Corporation, Lansing, Mich.

Industrial health and safety is undergoing a revolution. It is to the best interest of the employer, be he a business man, shop keeper, or an industrialist, to be ever watchful for safety in all of its ramifications.

The safety program has been a long uphill battle and has progressed because of the National Safety Council and the local safety councils which have been fostered by business. This, thru the co-operation of law enforcement officials, has been most effective. It is a known fact that large corporations

maintain special departments for safety; this has been mostly along the line of physical problems. Many small companies have services from outside, thru insurance companies and private companies. Yet none of these are effective if management does not put pressure to bear on solving the problems. Committees of supervisors or workmen is not always the answer. The money in the budget for proper policing is most necessary.

For years, we have stressed the physical aptitude in all of our discussions but not

some of the other facets which bear on the reasons for accidents. Many large companies now engage specialists such as medical directors, industrial health engineers, and psychologists for the purpose of making the conditions in the factory as well as the manpower conducive for healthy and safe operations.

The mental attitude of an employee, whether in the office or factory, often times contribute to accidents which can be prevented. Any one of us has experienced this with himself. These can be prevented by the proper handling of people.

The human behavior of the employee and the employer are studies which are attracting the attention of safety specialists. Note, I said "both the employer and employee." The following is an excerpt from a letter received from a noted psychiatrist at Wayne State University in Detroit, Michigan; "Thru out history man has seemed to be able to learn to manage physical phenomena, devising new machines and gadgets far more effectively than he has been able to manage himself, his emotions, his social, and his occupational relationships. Yet, emotional and social disturbances of employees are costing industry billions of dollars annually in absenteeism, low productivity, accidents, and other forms of work disruption. Now, after years of inactivity, many business and industrial leaders have begun to take action to assist the workman because, thru rehabilitation, many a man can be a good productive employee and a good family man."

Another phase that tends to develop accidents or impair safety in the plant is health environment. This is having more concentrated study and is being corrected. Sound environmental health engineering principles, thru research and development, have provided health engineers with adequate know how to design and provide control for all types of industrial activities or operations which produce and/or liberate dusts, mist, fumes, gases, and vapors to the air in places of employment. This is a savings, not a cost, even tho the benefits derived are intangible in nature.

The employer loses as well as the employee. A pamphlet produced by the American Mutual Insurance Alliance shows that to offset with profits a \$100 accident loss, business must perform these sizable tasks

1. Detroit must construct two-thirds of a popular low priced sedan.

2. A communications equipment plant must build 15 televisions.

3. A supermarket must ring up 359 twenty dollar sales.

4. A restaurant must serve 1,563 \$2 blue plates.

5. An office supply retailer must sell 4,750,000 paper clips.

According to government statistics a few years back, there are 350,000 small companies who, because of size or capital, cannot initiate comparable programs in health and safety as large companies maintain. However, they are, in the main, insured, and thru the proper direction by the insurance companies many health and safety principles can be maintained in some measure.

A greater portion of the small business and industry belongs to one or more associations. A recent survey showed that few of these organizations, if any, were making health and safety a part of their business. This is one activity, with little cost, in which the association can be helpful in just pointing out to members that it is a savings, not a cost, to prevent accidents and assist in maintaining the health of the employee.

The National Association of Manufacturers has for years had a health and safety committee, and the most active members have been the large companies whose sole purpose is to help the smaller. Its sub-committees are:

1. Mental health.
2. Occupational medicine.
3. Industrial Hygiene & Toxicology.
4. Occupational safety.
5. Non-Occupational health & safety.
6. Rehabilitation.

It is hoped that, by example, other associations will develop along similar lines in the welfare of both employer and employee.

It is not new for business and industry to initiate, because it is a fact that a very high percentage of A.S.A. standards were developed from associations' voluntary codes. This alone is evidence that the associations can do the job that is required.

THE DEVIL'S ADVOCATE

By DR. CARL CABE

Commissioner, Department of Industrial Relations, Frankfort, Ky.

Nelson Bortz spoke of the coordination of the mutual interest of the groups, and Mr. Mattei discussed committees of various groups within the state and organizations. Mr. Bortz also mentioned the need for effective compliance.

These are some things that I think should be explored during our discussion period. How do you cooperate? How do you bring together mutual interests? What is effective compliance?

In developing the standards that we have written in Kentucky, we have used as our source a large number of existing codes, including those of the United States of America Standards Institute and the several states. After the first draft of each standard was compiled, various groups were invited to comment on the standards that we have written.

Hundreds of individuals have offered comments. Hundreds have received copies of the first drafts, and many have attended a number of meetings to discuss the second, third, and, in many cases, the fourth drafts. Only then do we have public hearings on these codes. This has worked for better compliance and better knowledge of the new standards. This technique has improved the clarity of our codes. Without question, we have developed more effective and workable standards.

I would like to have some questions and comments from those of you in the audience

who have participated on similar types of committees or advisory groups during the development of occupational codes in your state. I feel sure that you are not going to let Mr. Mattei leave without questioning his statements relative to the fact that we should have committees in the various states.

A great deal was said about education and this sounds good. But I am concerned as to the kind of an educational program that we are talking about. I think it sounds fine that you say an educational staff should be separated from the investigational staff. Frankly, I think this should be questioned. Many safety people say investigations and safety education should be separated, but I think that this should be torn apart a little bit.

I would be the last person in the world to say teaching doesn't involve special techniques. But, with new machinery, chemicals, and processes continually being installed in various industries, I do not know how a person can properly educate if they do not get into the plants from time to time to become aware of these problems.

I don't buy the fact that you are going to make everybody mad because a state organization goes into a plant and says that you have to do it this way. It is true that you do make some people angry, but they do not stay mad, and sometimes the ones that get the maddest turn out to be your best helpers in the future.

DISCUSSION

Chairman: Dr. Carl Cabe, Commissioner, Dept. of Industrial Relations, Frankfort, Ky.

Iowa Factory Inspector: In Iowa, we have trouble making our inspections stick. We can go into a plant and tag out a machine as being unsafe; in a matter of two hours, the company will have an injunction from a court necessitating the removal of the tag and allowing the machine to immediately go back into operation.

Mattei: The factory inspection laws in the State of New York are apparently different, because the company cannot obtain an injunction to remove a tag, and we have had some cases where we, the Factory Inspection Department, obtained an injunction prohibiting operation of the equipment.

Safety Engineer, Phillips 66: Aren't we talking about a very small minority of companies that would need safety laws in order

for them to be convinced that their plant should be safe? Our company has established a very good safety program without being forced into it by state laws.

Utah Factory Inspector: Our department has never experienced any difficulty in having equipment tagged as unsafe. Whenever we have tagged equipment, the company always has the equipment fixed, and no problems are encountered.

Representative from India: What is the Federal government in this country doing to try to get uniform safety laws in effect throughout all 50 states?

Bortz: Because of the U. S. Constitution and the generally accepted Federal-State relationship procedures, the Federal government has accident prevention controls over only certain industries such as railroads, motor trucks, mining, and some companies that manufacture goods for the Federal government. Therefore, the primary responsibility for accident prevention laws covering most industrial workers is in the hands of the 50 states.

Representative from the Florida Industrial Commission: Mr. Eichhorn mentioned safety training in apprenticeship courses. I am wondering if he has any specific cases that he can elaborate on?

Eichhorn: One example is the tool and die lodge of the machinists union here in Chicago. They have made accident prevention training an actual part of the apprenticeship course. Many of the international unions are now urging their locals to insist on mandatory safety training in apprenticeship courses when they negotiate these types of contracts. In addition, the labor movement has urged all of its members that may be on school boards or in other influential positions to insist on safety training in school shops and laboratories. We also strongly urge safety training in all walks of life in the schools, not only in shop classes.

Bortz: I would like to add that the U. S. Department of Labor is presently making some significant improvements in insuring that safety training is incorporated in all of the occupational apprenticeship courses that are being initiated under its auspices and, especially, under the manpower redevelopment procedures.

Unknown: How would Mr. Eichhorn de-

scribe a complete and effective safety program? He indicated that the placing of safety posters on bulletin boards and safety articles in various publications are not really effective safety programs.

Eichhorn: One of the primary requisites of a good safety program is a joint labor-management program. Across the entire country, the most successful accident prevention programs are those of this type. This cannot be a one-way street. If labor is brought into the initiation or development of a safety program from the beginning, both sides better understand each other and are more willing to cooperate with each other in order to obtain the common goal of no accidents. When a company insists that everybody must do this or that as of a certain date, there is normal resistance because practically nobody likes to be told that they must do something, especially if they have no voice in what is to be done.

One day or one week campaigns or special drives are not at all effective in actually reducing accidents. They may gain publicity and notoriety for a few people; however, they very seldom really change attitudes or actions which are the primary things that reduce accidents.

Rinefort, Illinois Factory Inspection Bureau: Several of the papers presented indicated the outstanding accident prevention success we have had over the past years with the voluntary method of providing accident prevention for workers. I would like to know from Mr. Bortz or Mr. Mattei just what parts, if any, should the Federal government and the various states play in future industrial accident prevention work?

Bortz: One strong step forward would be the modernizing and up-dating of present safety codes and regulations by the states and, to a lesser degree, by the Federal government where they have jurisdiction. There are a number of states which do not have the basic authorizing and enabling legislation necessary to do a good job. There are a number of states which do not have sound safety codes. Fortunately, we heard from two states today that have relatively effective and sound safety codes. There is one thing that states and the Federal government suffer from—the lack of resources to do a good job. The factory inspectors and their supervision of all states should have permanent

secure positions and not be subject to change whenever there is an election. It is impossible to hire and hold qualified people if this is the case.

Cooper, Reynolds Mining Corp.: Since approximately half of the accidents that occur involve an unsafe act, I would suggest that any future consideration toward state safety regulations be directed toward these types of violations, at least the portion that can be so directed. I would like to ask Mr. Eichhorn what he thinks about this?

Eichhorn: There is no doubt about the fact that unsafe acts cause a significant percentage of the accidents. Most unsafe acts are usually caused by an apathetic or irresponsible attitude. I feel certain that the more we go into automation, the more apathetic attitudes are apt to develop. I believe that one of the problems we are facing today in accident prevention is the fact that all men that are in the military service are taught to believe that they will not be shot or injured if they perform to the best of their ability. This is one of the reasons that the military services can get a man to go over the top and become an attacker. When he does this, he must believe

that he will not be hurt, or else it will be very difficult to get him to attack.

Conversely, these military men return home and must be taught to think differently. They must have an attitude that the accident *can* happen to them and that they *can* be hurt. I believe that this type of confusion is very difficult to counter; this is probably one of our biggest obstacles in trying to train the industrial worker. Accidents can happen to him regardless of whether they are on the job or off the job. Therefore, he must act carefully and in accordance with sound accident prevention procedures.

We are not denying that the unsafe act is a tremendous cause of accidents but we do feel strongly that the attitudes can be molded in such a way as to reduce unsafe acts.

Unknown: Are there any Federal grants to states for improving industrial accident prevention programs?

Bortz: There are no Federal outright financial grants available to the states for this purpose, at this time. Of course, there are Federal grants for occupational health studies from the Public Health Service of HEW.

SUMMARY

By HARRY N. ROSENFELD

General Counsel, National Safety Council, Washington, D. C.

We have heard a wealth of material with six different magnificently expressed points of view. I shall not summarize what your panelists said; rather, I shall try to reach some of the common threads that appeared through all of these various comments.

First, there seemed to be two overall themes. In the beginning, your chairman indicated that this was "a coordinated discussion on how to advance the safety of workers on the job." Midway through the session, Howard Pyle challenged us by asking "if we are only doing what we should be doing?" In particular, he pointed to the fact that the high voluntary performance standards for the protection of the worker are the big assignments, the achievement of which would do more for industrial safety than by any other means. There was the challenge that both themes put to us.

There were nine common themes expressed by the speakers:

1. A sense of urgency, indicating that we have to move faster on a broader basis, in order to keep up with the pace of technology. Mr. Patenge started his remarks with this almost frightening sentence, "Industrial health and safety is undergoing a revolution." Nelson Bortz said, "We can't wait." Mr. Sherman said, "Technical advance today is increasing at a rapid and dizzy pace." Howard Pyle pointed out the practical significance of this dizzy or revolutionary pace. He said that 60 per cent of the industries rated in a survey had worse records than they showed 10 years ago, and that the all-industry rate has been creeping up during the past three years.

2. The consistent and universal tone of self-criticism on the part of everyone that spoke. Each segment of the safety community saw the need for improvement and expansion of its own activities. It felt that it was not doing a good enough job. Mike Biancardi put this in the most precise way, "Are we doing enough?" He replied, "The pat answer, is, 'No'." He had three proposals for industry.

For industry, Mr. Patenge said that more

top-level pressure was needed, more industries financing their own program, industry has to establish a healthier environment for safety. Stanley Learned commented on the value of industry's turning to insurance to find out more how industry could do a better job.

Nelson Bortz saw the need for greater involvement of State and national governments in accident prevention. Our friend from the Chicago Factory Inspection Bureau indicated a greater need for updating state legislation, as well as updating staff and career service. Mr. Mattei wanted some new approaches and requested that state efforts not be directed only toward enforcement.

Mr. Eichhorn called on labor for stronger contract negotiations to obtain safety, and for an increase in its own internal union safety activities, both at a staff and grass roots level. He also saw the need for coping with the employees' own bad safety attitudes, a point of view with which Mr. Cooper of Arkansas agrees.

Howard Pyle said that while the efforts of the National Safety Council were reaching 20 million workers, for half of this number it is "not as well as we could or should." Mr. Pyle also said that none of us have "turned on" every source of our own respective strengths.

3. Cooperation by all segments. Industry, labor, government, safety groups, insurance, universities, and researchers must cooperate for-and-in all aspects of accident prevention. For Nelson Bortz, the "central question" was whether we could marshal our collective resources and responsibilities. He called for "realistic and active coordination in our separate but mutual interests." He highlighted the need for cooperation between our Federal and state efforts. Mr. Mattei advocated the use of advisory committees to the state labor departments. (Dr. Cabe was disappointed that there was not more questioning about this particular point.)

Mr. Patenge saw the need for the cooperation of the insurance and trade association groups to cope with the problems

of small business. Bill Johnson pointed to the trade associations as an important aid in that particular area.

Mr. Biancardi stressed the importance of industry's cooperation with government and within itself in the development of both voluntary and regulatory standards and in their enforcement. Mr. Eichhorn saw the need for labor to cooperate with local public groups to get safety on a broader level. He also talked of the need for industry to cooperate with labor and develop a two-way street in the industrial safety programs, a point of view which found ready sympathy from Stanley Learned.

4. The consensus that the support and active participation of top leadership in all segments was necessary if the safety movement wasn't to flounder. Mr. Patenge, speaking on behalf of the NAM, said that none of the known techniques "are effective if management does not put pressure to bear on solving the problem." Mr. Sherman, who delivered Mr. Webb's paper, said that one of the fundamentals for a successful state program was active, vigorous and known support from the governor and the legislature.

5. The virtual unanimity that the voluntary safety movement is a "must," if we are to improve our industrial safety records. For industry, Mr. Patenge said "the safety program" has progressed because of the National and local safety councils. Mr. Biancardi pointed out that voluntary safety movements, including the National Safety Council, are necessary for the development of voluntary standards for industry. Mr. Allen, for the insurance industry, pointed out the indispensability of the National and local safety councils, among other voluntary organizations, in the promotion of industrial safety on a broad across-the-board national basis. Mr. Gidel, for the Federal government, had a slide which presented the role of the National Safety Council, in particular the industrial and labor conferences, in coordinating and convening functions. A similar objective was stressed by Mr. Mattei in state programs, with respect to some of the voluntary agencies. Mr. Eichhorn referred to the role of the National Safety Council in labor's effort to build a strong and growing union safety program.

6. The perennial problem of money and

the need for adequate financing. There was substantial unanimity that good safety programs cost money, and that the money has to be found. The interesting thing about this point is that everybody says it—not merely the government, not merely labor, but industry, itself, also says that its own programs must be better financed.

Mr. Bortz, for the Federal government program, called for the "constructive support by the private safety community in terms of . . . adequate budget." Mr. Eichhorn said that one of the jobs of labor was to "continue to push to get money from government spent on industrial safety in the amounts equal to (conservation grants and agricultural and animal husbandry grants)." He also stated that labor was going to push for improved state departments and improved factory inspection. Mr. Patenge said that, so far as industry was concerned, "committees of supervisors and workmen are not always the answer. The money in the budget for proper policing is most necessary." As far as safety councils were concerned, Mr. Patenge, Mr. Biancardi, and Mr. Allen all showed their support for adequate financing to meet the full responsibilities of national and local safety councils. Mr. Allen made a very interesting point; a sort of a reverse financial incentive to industry by experience rating indicating that the better you do, the less you have to pay and the less money you need.

7. While the role and nature of governmental and non-governmental standards were a matter of general preoccupation, there wasn't always agreement as to what they should be or how they should be obtained.

In general, Bill Johnson outlined the sources to which you can turn for voluntary industry safety standards, both inside and outside the National Safety Council. Mr. Bortz said that no matter where the standards came from, "compliance became the essence of safety." He called for the abandonment of selfish employers, union or government predilections—instead, he looked for "good, broadly conceived public criteria."

Mr. Sherman pointed to the essential of enabling legislation on a state level which permitted regulations without delay.

Our friend from India raised the question why the Federal government didn't do more. It is sometimes hard for our friends from

overseas, to realize that we have 52 governments in our nation—the states and the District of Columbia, as well as the Federal government.

Mr. Biancardi stated that industry is not only complying with standards but is, also, going out of its way to assist itself and its colleagues toward compliance, by self-inspection, self-education, exchange of information, *etc.* Mr. Patenge stressed the importance of voluntary standards on industry's initiative. Mr. Allen said that no matter how good the standards were nor how good the enforcement, more than those were necessary. Mr. Eichhorn noted that labor would insist on strict and fair enforcement of whatever safety laws we have.

Howard Pyle stated that we must "cooperate fully with the administration of industrial safety laws, while we do our utmost to avoid the necessity for more and more of the idea that there ought to be a law." He said that we can avoid this concept by strong compliance with high performance of voluntary standards.

8. The importance of education and training. There was a general consensus as to the indispensability (if not generally the effectiveness) of the educational process in achieving significant accident prevention results. Mr. Gidel and Bill Johnson described, respectively the U. S. Department of Labor's and the National Safety Council's wide variety of training programs.

Mr. Mattei pointed out, interestingly enough, that while we talk about it, not enough attention has been paid to education for accident prevention. He proposed the separation of education and enforcement functions in order to obtain management cooperation. I am not sure that I saw all of the implications of this proposal; there was both disagreement and agreement here on the parts of representatives of California, Utah, and Iowa, relative to their experience on "tagging" and on the effectiveness or ineffectiveness of education apart from enforcement. Dr. Cabe has some very strong views on the subject, as well.

Mr. Mattei also called for the incorporation of safety into the curriculum of vocational training programs. Mr. Downing, with the quick assent of Mr. Bortz and Mr. Eichhorn, agreed that safety ought to be incorporated in apprenticeship training pro-

grams. I have already referred to Mr. Eichhorn's insistence that unions, themselves, conduct educational programs to a greater extent than they have. Mr. Allen gave a very interesting discussion of the insurance industry's direct help through educational and consulting programs with management with which the chairman, Mr. Learned, agreed from his own experience. Mr. Patenge indicated a heavy emphasis on the need for dealing with employees' mental attitude in reducing accidents.

9. Research. Everybody agreed on research and development as an essential ingredient in the safety program. Mr. Bortz listed this as the very first of his four program essentials, putting it in the terms of comprehending the problem. He called for "more research before, not after, the accident", so that we could anticipate the safety implications. Mr. Allen and Mr. Mattei stated that more industrial research was necessary and, interestingly enough, both of them called for more pure research, as well as applied research. Dr. Cabe deplored the lack of momentum for industrial research and queried just how much use is made of the research already done.

Here then, are the nine common threads which I perceived in the session discussions:

1. A sense of urgency.
2. A self-critical spirit.
3. The necessity of cooperation.
4. The essentiality of top leadership support.
5. The indispensability of strong safety councils.
6. The need for adequate financing.
7. The role and nature of regulations and standards.
8. The importance of education and training.
9. The vitality of research and development.

Mr. Chairman, in conclusion, may I give a summary of a summary, a subjective reaction to what I got out of it all?

1. Time's fleeting.
2. There is more than enough for everyone to do.
3. This isn't a penny-ante game.

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