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Home Conference Sessions

ATTACK ON THE CORPORATE CITADEL

By DONALD W. DODSON
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"I tell you there is big trouble in River City, and not just in River City; there is even bigger trouble in them bigger cities." In that fashion, a leading Chicago attorney opened a keynote address product liability briefing session in January 1968. At that time, there were probably 100,000 product liability suits filed each year, and the first million dollar judgment was still in the future. Currently, an estimated one million suits are filed each year, and multi-million dollar judgments are not uncommon.

The broad problem of product liability takes on new dimensions every day! The watchword is "caveat venditor"—let the designer, the engineer, the production specialist, the manufacturer, the assembler, the packer, the marketing specialist, the advertiser, shipper, distributor, wholesaler, and the retailer beware—for liability is yours.

Defect-free products don't just happen! Faith in the designer, hope in quality control, and charity by the courts are but dreams that bring nothing but disillusionment. Product safety is, indeed, everybody's business, and certainly it should be everybody's concern. It is perhaps the biggest single exposure to loss faced by manufacturers and others in the distribution chain today. The potential impact on solvency and even survival is immense—some would say unreal!

The total subject of product safety or liability is far too complex to cover in more than a superficial way in the space available here. If I can only awaken the interest of those companies that have not yet taken the action necessary to develop a totally effective products loss control and claim defense program, I will then have accomplished my purpose.

In any discussions of this subject, bias is difficult to avoid and objectivity is difficult to sustain. However, avoiding bias and sustaining objectivity are both important to the realistic examination of the problem.

Both the cost of loss and the cost of producing safety continue to increase at an alarming rate, and total loss control has achieved tremendous importance as a cost-avoidance tool in business enterprise. The decision-making process must move out of the shop and into the board room if the unrelenting attack on the corporate citadel is to be met effectively.

Consider this statement, included in a decision rendered by the United States Supreme Court in a products case: "This is a day of synthetic living, when to an ever increasing extent our population is dependent upon mass producers for its food and drink, its cures and complexions, its apparel and gadgets. These no longer are natural or simple products, but complex ones whose composition and quality are often secret. Such a dependent society must exact greater care than in more simple days and must require, from manufacturers and producers, increased integrity and caution as the only protection of its safety and well being. Where experiment or research is necessary to determine the presence or degree of danger, the product must not be tried out on the public, nor should the public be expected

to possess the facilities or the technical knowledge to learn for itself of inherent or latent dangers. A claim that a hazard was not foreseen is not available to one who did not use foresight appropriate to his enterprise."

That statement is as current as today, and yet it was made 23 years ago, by the late Justice Jackson of the United States Supreme Court.

The problems of product liability obviously are not new—they have just been ignored. The explosive magnitude of the problem today can no longer be ignored. This situation reminds me of Winston Churchill's summary of his own career: "I have achieved overnight popularity--after exactly 50 years of being available for it."

Now, work accidents involving consumer products sold in the United States account for about 20 million injuries a year, according to the United States Department of Commerce study on product liability insurance. Motor vehicle accidents are not included in that figure. An estimated 110,000 of these product-related injuries result in some form of permanent disability, and fatalities occur in about 30,000 cases.

Today's claims and allegations are as broad and varied as the imagination of a claim-conscious public. Anyone who stands between raw material and finished products must stand ready to respond in damages for injuries resulting from a defect in his product, and those who are more concerned with creating a customer by their product description and their advertising claims, and less concerned with adequately warning the customer of the hazard of improper use or misuse, faces an extraordinary exposure.

A defect can be created or can occur anywhere in the manufacturing process, from design concept, to delivery of the packaged product, to the user. It can be created by oral or written statements made by the manufacturer or others in the sales chain, or by the absence or inadequacy of instructions for safe and proper use and warnings of the hazards of misuse or abuse.

The attention and publicity given to the rights of consumers has created a high level of sophistication and expectation on the part of the consumer with regard to his opportunities to pursue a legal remedy for his injuries, and today's claims are as broad and varied as the imagination of a claims-conscious public.

Our technological advances and the complexities of today's machines and products are being matched by increasingly liberal interpretations of the laws and doctrines that govern this field of tort liability. Both legislative and judge-made law seem to be based on the premise that the interests of society transcends that of protecting reasonable business expectations, and if a buyer or user suffers an injury which is in anyway related to the use of a product, its manufacturer should be held liable even if he is not at fault. Today, the distinction between "strict liability" and "absolute liability" seems to be largely one of semantics.

As long ago as 1912, a court opinion stated: "The remedies of injured consumers ought not to be made to depend upon the intricacies of the law of sales. The obligation of the manufacturer should not be based alone upon privity of contract. It should rest . . . upon the demands of social justice."

You are aware of the value of a total loss control program and that, today, companies must respond to standards of corporate conduct established by OSHA, CPSA, EPA, and others. Total loss control requires the consolidation of responsibility at one place in the management structure for evaluation, cost analysis, and action with respect to all identified sources of loss. Such a program facilitates the examination of all loss exposures in a way that will pinpoint interaction. Clarify priorities and simplify the cost/benefit decisions that must be made.

Specifically, with respect to product liability, a company should:

1. Designate one member of top management as coordinator of the program, with the responsibility and authority to act.
2. Establish and enforce company policy that makes safety to the consumer or user a paramount consideration in every step that brings the product to the market.
3. Communicate that policy effectively to all in the organization who are involved.
4. Use effectively all the resources available in the implementation of its program.

The action of any company management will be directly proportional to the seriousness of the product liability problem as they perceive it. They depend on others in their organization to provide facts and data to support recommendations for action. It is certainly a responsibility of the safety professional to be certain that this problem is not falsely perceived or, worse, ignored in his organization.

It is unusual to pick up a trade, association, professional society, or management publication these days that does not address the subject of product safety or liability in some fashion. It would seem, then, almost impossible for those responsible not to be aware of the products problem and its magnitude. And yet, there are many companies both large and small who operate at various points in the distributive chain who have not come to grips with the hard facts of the real world of product safety and liability. They seem complacent in the belief that their past experience and their insurance carrier will protect them from all problems of civil responsibility. Perhaps so in days long gone—but not today!

If a company is unable to document fully and defend all procedures and decisions as having been in the interest of safety of the user or consumer, and with full knowledge of all that was known or should have been known of the foreseeable hazards of use, then that company will likely stand defenseless before the bar as the judgment is announced.

It is obvious, then, that the defense must be built along with the product and documented at each step. Those who design should do so with liability in mind, and the decisions with respect to reliability and safety should be made as if the million dollar loss had occurred yesterday!

Those who write copy for advertising and sales literature, and for instruction manuals, as well as those who make verbal representations regarding a product, should fully understand the standards of conduct imposed under the warranty theory and that any question as to interpretation will be decided against them on the basis that they had the knowledge of the product and had the chance to say exactly what they meant. Weasel words are indefensible in a courtroom.

Those who stand on the battlements of the citadel must be totally committed to a program that fully meets the needs of today and the challenge of tomorrow. A white picket fence just won't cut it when a solid stone wall is needed!

The past is prologue. The future is problematical, based on two king-size questions:

1. In the light of today's technology, if all that is known about how products could be made better and safer were applied in practice, would the number of product-related injuries be substantially reduced?
2. With all our advanced communication and education techniques, could a national educational program be mounted that would create an acceptance by product users of their obligations for risk awareness and risk avoidance? Simply stated, the obligation to read the instructions, follow them, and heed the warnings.

Those are questions to be pondered! Should the answer to both be "Yes", then the problem would systematically be cut down to very manageable size.

Should the answer to both be "No", then solutions will continue to be sought in the areas of legal and judicial reform and procedural restrictions that will treat the symptoms and perhaps ease the judicial burden, but will do little to cure the illness.

I would propose that a maximum effort be launched by every industry and agency involved to accomplish solutions or improvements with regard to the two ponderable questions, and that judicial/legal reform be worked out that will achieve greater equity for both sides in the dispute and improve the efficiency of the adversary system.

Until such time as the current socio/legal atmosphere is changed, I assure you the current attack on the corporate citadel by those seeking recovery for real or imagined injuries will intensify. Those who will oppose you in court, if you should find yourself there, will be informed and organized. They will find you in a jurisdiction of their choice. They will have access to all your records; your corporate life will be an open book. The twelve good men and true who must be convinced will very likely be more sympathetic toward the little man with the deep wound than toward the big company with the deep pocket.

Wake up, industry—it may not be too late! Understand the problems that surround you, and then act upon them before those outside your arena of expertise go off and solve your problems for you as best they can.

Look to the future with responsibility and determination. Responsibility in accepting the results of your errors as a risk of your enterprise. Determination to correct the cause of your errors, and resist with logic and fact those allegations which you consider unjust.

By working together in all arenas, I am confident that one day we will more closely approach Noah Webster's safety—freedom from injury and hazard!

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PRODUCT SAFETY TRAINING—FORMAT AND CURRICULUM

By LEE GASKINS
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Training in product safety is as relevant as training in any other management function. People will perform in a desired manner when they understand why it is important, what they are to do, and how it is to be done.

Six years' ago AMF embarked on an active training effort as part of the corporate commitment to promote product safety and control loss exposure from product liability claims. The dark clouds of the so-called "product liability storm" had already gathered on the horizon. The potential financial impact on the corporation was recognized, and the bottom line was the target of a new fearless villain.

When considering the need for training, I can share my observations of the past six years. Training is needed because most members at all levels of management have a rather limited understanding of the multi-faceted subject of product liability. As a result, they have a difficult time supporting or participating in the activities directed toward product safety. This limited understanding of product liability can bring about poor decisions, poor controls and, ultimately, poor products. All sorts of product liability problems can develop. On the other hand, enlightened management can enthusiastically support, participate and make well-informed decisions, develop advantageous controls, and send more reliable products into the marketplace.

Another benefit of training is it helps management take a broader view of the product liability or safety problem. For example, because of each person's background, education and experience, a purely subjective approach could limit his point of view. Consider the marketing executive: When he runs up against a product safety problem and/or solution, what is likely to be his primary interest? Sales! How will this affect sales? Take the financially oriented executive: What is apt to be his first thought when faced with a problem? Cost. How much will it cost? Engineering, legal, purchasing, manufacturing—all have some degree of tunnel vision based on their knowledge and experience, until they are exposed to the big picture. Training will broaden their knowledge and understanding, giving them the perspective needed.

There are as many ways to approach product safety training, as there are corporate organizations. Some of you represent large companies with many layers of management, whereas others come from smaller firms, perhaps with a single manufacturing location.

There is a need to educate all levels of management and employees. Each must understand what type of contribution he or she can make in controlling product liability exposures. Obviously, the program must be varied to suit the objectives you have for each level.

To provide a base for understanding, the question, "What is product liability?" must be answered. Visual aids are useful in helping people learn through their eyes as well as their ears. Professional trainers tell us as much as 87 per cent of our knowledge is gained by the eye compared to less than 10 per cent through the ear.

We have found it necessary to explain the types of product liability claims so there would be an understanding of the basic requirements regarding negligence, breach of warranty, and strict liability claims.

At times, it is useful to define "con-

sumerism" and look into some of the past efforts in Washington to produce legislation that affects product liability. To show the impact of recent legislation, a visual aid is shown that graphically portrays what has happened in the past 10 years. This explains why we are so concerned today, because the cause of this concern may not have even existed 10 years' ago.

In a similar approach, the history of product liability is revealed through a discussion of significant cases, beginning with *Winterbottom* vs. *Wright*. The point of emphasis is that the legal precedents for Breach of Warranty and Strict Liability claims did not exist before 1960 and 1963 respectively. These landmark decisions provided the basis for further liberalization which continues to the present time. The traditional defenses for the manufacturers are being torn down, making it easier for plaintiffs to bring successful product liability actions and be the recipients of judgments that are often extremely excessive and unrealistic. To dramatize the financial impact of the recent product liability development in federal legislation and courtroom law, examples of claims and losses from our company and others are noted. Visual aids help greatly.

When the basis of understanding seems firmly established, there is a good concept of mechanics of product liability and the fact that it is a problem deserving their attention. Then the transition is made to its control.

If you have a corporate or company policy or procedure, it should be reviewed. This serves to inform the group that top management firmly supports its efforts to control product liability exposure. Specific control measures are described and tailored for the group being trained. If it is a collection of management personnel from various functions, a review of applicable control measures for all functions would be desirable. If the training was provided for a group representing one department, the training would be structured to highlight that department's control measures.

Another facet or dimension in training is providing the product liability committee members with an understanding of their roles in an effective program. Training should be provided to help them understand how they can contribute.

Employee training can begin with new employee orientations, stressing the importance of the employee's role in building safe products. Suggestions for improvements should be encouraged. Job training should also cover the important aspects related to product safety. Examples of all of the subjects presented at one time or another range from CPSA, Types of Material Failure, Design Review, Failure Mode and Effect Analysis, and Fault Tree Analysis. Workshops are also used to help provide practical exercises to put the theory to work.

Obviously, if training is needed, retraining will also be needed from time to time.

The result of an effective product safety training program is a better informed management, supervisor, and employee. Armed with better understanding, I believe more product liability problems or exposures will be recognized and, more importantly, recognized at an earlier state in the life of the product. With this understanding, and an appreciation of the consequences if corrective action isn't taken, there is a stronger urge to take whatever time is needed to evaluate the problem. It is my experience that when a potential problem is recognized and someone says, "Stop, let's take a look at this," the biggest part of the battle is over. Most often, the action required will be the application of common sense.

If your company's objective is to reduce product liability loss exposure, an effective training activity will help you accomplish your mission.

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UL ORGANIZATION AND PURPOSE

By ROBERT VAN BRUNDT
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Many of you are probably familiar with Underwriters Laboratories and its purpose, but for those of you who have limited knowledge of our organization, a brief look at our background and purpose will be helpful in understanding how our work can benefit you.

It was almost 100 years ago that Thomas Edison perfected his incandescent lamp and started the electrical age in which we live. In 1893, Edison's new electrical lighting system had its first large-scale use in Chicago at the Columbian Exposition—a world's fair. The Palace of Electricity was one of the feature attractions, because this newfangled electric light was something new and exciting. But during construction of the buildings, fires were breaking out because of inexperience in installing electrical circuits and fixtures. The insurance underwriters for the buildings were concerned, of course. They brought in an electrical engineer from Boston to establish safety procedures. His name was William Henry Merrill. His guidance and practices cured the problem, and the Columbian Exposition was a success.

The insurance underwriters quickly saw the merit in Merrill's work and in 1894 set him up in a small lab over a fire station in Chicago. He had two assistants in a small room. The insurance underwriter wanted Merrill to test the new electrical devices coming on the market. The operation of UL was subsidized by the insurance industry until World War I, when it became self-supporting. During this period it had a phenomenal growth, and its work was increasingly recognized by governmental authorities as well as the insurance field and industry.

The capital stock insurance companies continued to "sponsor" UL until 1968, when they, in effect, fired themselves to give UL complete independence. Today, UL is an independent, not-for-profit organization testing products for public safety.

There is no capital sotck, as we are a membership corporation. Our 131 members come from a broad spectrum of our society. In contrast to our earlier days when the membership was 100 per cent insurance industry, no more than one-third of the members can now be from any one of nine categories. Most of UL's members serve on one of five Engineering Councils, according to their expertise in the safety field.

In addition, we have a Consumer Advisory Council composed of individuals who work with or represent consumers. This Council gives UL valuable input from the user, or consumer, viewpoint.

Now, let's talk about our basic, day-to-day work that benefits you.

First, we test and evaluate the product in our laboratories to determine that it meets nationally recognized safety requirements. The products we test are submitted to UL by the manufacturer. When our engineers determine that the product does meet requirements, the manufacturer then agrees, by contract, that our trained inspector can go into the factory, unannounced, to audit or countercheck the factory production controls to see that the product is being made to meet the same safety requirements as the sample did in the laboratory.

Only then can the manufacturer apply the UL label to the product. Most UL labels will indicate that the product has been "listed". This means it has met all requirements to reduce the foreseeable hazards of fire, electrical shock, and casualty. If the product has been

evaluated for only one hazard, it will be "Classified". Building materials are an example, as we are interested only in their degree of flammability. "Classified" does not mean "safe". It means only that UL has tested the product in a specific manner, or that only one of the recognized hazards has been evaluated.

Our testing work is accomplished in five laboratories across the country. Our largest test facility is on 140 acres in Northbrook, Illinois.

UL's Factory Follow-Up Service is handled from inspection centers in the United States, and in over 35 foreign countries. We have about 500 inspectors working out of almost 200 inspection centers. The products made in other countries for import by the U.S. must meet the same requirements as domestic products.

UL has developed and published over 360 Standards for Safety. These standards spell out the requirements for the product categories which we test. Most UL standards have been recognized as American National Standards.

To summarize the scope of our work, last year UL completed over 41,000 product tests, made over 240,000 factory inspections, and employed over 2,000 people in its labs and inspection centers. While we are not-for-profit, we are self-supporting. About 50 per cent of our income is from testing fees, and 50 per cent from factory inspection fees.

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HOW TO BENEFIT FROM UL'S SAFETY TESTING

By DONAL BRETING
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None of UL's testing of products for fire safety, electrical safety, and casualty hazards, interesting as it may be, will benefit you unless UL effectively communicates that a product in which you are interested is available and is the full equivalent of the samples which have been examined, tested, and found to comply with UL's safety requirements.

We have tried to anticipate what information you require and then tailor the information so that it gives you what you need at the point you need it. We believe you need information on acceptable products at two points: (1) when you are in the planning phase, and (2) at the point of purchase or delivery of purchased product. Some examples will help explain what I mean.

Suppose you are planning the purchase of an industrial lift truck for your factory and are interested in one which has been examined and tested by UL. UL's Classified Products Index can be of help to you. Beginning on page 41 of this Index you will find the names of manufacturers who have submitted their trucks to UL and have demonstrated that they can manufacture trucks which will comply with the applicable requirements. The Index also includes liquids, such as cleaning liquids and insecticides, which are classified as to fire hazard; floor waxes classified for slip-resistance; and other products where the extent of UL's involvement is indicated on the classification marking.

Much helpful information will be found in UL's fire protection equipment list. Almost 50 pages of this list are devoted to extinguishers and extinguishing system units. Indicated are the descriptions of the classes of fires, types of extinguishers and systems which are capable of controlling and extinguishing such fires, and the names of the manufacturers who have demonstrated to UL that their equipment will perform the job. The list also includes automatic sprinkler equipment, fire and smoke detectors, fire alarm devices, and similar products.

The situation gets a bit more complex if you are planning a new building and require information concerning the fire resistance or fire hazard characteristics of different building materials. For example, the architects, designers, engineers, and plan checkers will need to know what assembly of building materials will provide the fire resistance called for in the local building code for certain portions of the building. This information is contained in UL's Fire Resistance Index. Within the covers of the Index you will find over 500 different designs of floor and ceiling assemblies, roof and ceiling assemblies, walls and partitions, and column protection which have shown by actual test to withstand exposure to fire for a specified time. The information is presented both in a design sketch and in text which indicates the materials and method of assembly.

Companion documents to the Fire Resistance Index are the Building Materials Directory and the Fire Protection Equipment List, which has already been mentioned.

In the Directory, the specification writer will find the names of those companies who have demonstrated to UL that they can build and supply fire doors of various types, some of which will resist fire for up to three hours. Also included are building materials classified

for fire hazard, roofing, and similar materials.

The engineer who designs the electrical installation for a building and the specification writer who translates the design into specific materials need to know the names of the manufacturers who can supply, for example, a panelboard for installation in a hazardous location. Such information can be found in UL's electrical construction materials list and hazardous location equipment list.

Equipment tested for casualty hazards, such as ladders, blowpipes and torches, powder actuated tools, and scaffolding, will be found in the accident protection equipment list. The directories which have been mentioned and directories covering other product lines are published annually and updated semi-annually.

While these directories are helpful and frequently needed for design, development, and order placing, some further communication is needed at the point of purchase or at the point of delivery of the equipment and materials. Here UL uses as the communication tool its listing mark or classification marking. The listing marks may incorporate the familiar symbol seen on appliances around the home. The classification marking or listing marks that appear on industrial lift trucks, building materials, fire doors, fire extinguishers, panelboards for hazardous locations, are generally more detailed. One for an enclosed panelboard for hazardous location includes the electrical ratings of the mains, the branches, and identifies the circuits.

The appearance of UL's listing marks on products indicates not only that the design of the product has been evaluated and found acceptable by UL but also that the product to which the classification marking or listing mark is attached has been manufactured under UL's follow-up service. This means that production has been monitored by UL by frequent unannounced inspections and tests at the factory to see that the manufacturer is controlling the product and applying the UL identification only to products which comply with UL requirements. Such unannounced UL inspections are at least four times each year and may be as frequent as daily visits in high production factories making certain products. Over 240,000 inspections were conducted by UL's inspectors in the U.S. and inspection representatives in 39 foreign countries.

It should be clearly understood that the presence of a manufacturer's name in a UL directory means that he has demonstrated a capability to make a product which meets UL's requirements. It does not mean that all of the products he makes and sells meet UL standards. The listing mark or classification marking on the product is the only means UL provides to identify products manufactured under UL's factory follow-up service.

The effectiveness of UL's engineering evaluation for compliance with safety standards and follow-up service at the point of manufacture is generally recognized by legally constituted regulatory authorities such as OSHA's recognition of products being used in factories. In this same category is the U.S. Coast Guard's approval of personal flotation devices and marine fire extinguishers.

Literally thousands of building inspectors and electrical inspectors rely on labeled products for installation in accordance with nationally recognized building codes and the National Electrical Code. The classification marking for a freight elevator door will tell the building inspector the hourly rating of the door and the minimum latch throw in inches which is needed to keep the door closed when it racks and bends during a fire.

The classification marking on an LP-gas fueled industrial truck which has been classified as to its fire hazard will be of interest to an OSHA inspector. The building codes of many cities limit the

flame spread of interior finishes in certain classes of buildings to 25 or less. The UL classification marking for acoustical material provides the information.

These are the means we utilize to communicate with you: UL product directories and UL listing marks or classification markings. We believe they are effective in answering your needs. If they are not, we want to hear from you.

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RESEARCH IN THE USE OF INJURY RECORDS FOR OBTAINING DATA ON CAUSAL FACTORS

By KELLY KING
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During the last seven years I have been involved in the development of injury information systems. This work has included three relevant studies. The first study involved the development and operation of a nation-wide injury information system for a single industry, i.e., solid waste management. This system is sponsored by EPA and is called the Injury Reporting and Information System (IRIS). Currently, 100 establishments from all over the country report injuries to a central office where data is analyzed and returned to each participating establishment in the form of quarterly reports. The major purpose of the IRIS program is to identify successful accident prevention methods by making very detailed comparisons between establishments with high injury rates and those with low injury rates. The IRIS injury information system has resulted in some novel ideas on what types of injury data to collect, how to collect it, and how to analyze data so that it is useful to participating establishments.

The second injury information system study on which this discussion is based is an injury records study sponsored by NIOSH. This study involved visits to 620 establishments in 25 industries across the USA. The study's purpose was to evaluate the existing injury recordkeeping procedures currently used by establishments in terms of the availability, quality, and utility of injury data applicable to NIOSH's safety research needs.

A third study, also sponsored by NIOSH, involves on-site investigations of 125 occupational falls by a multidisciplinary team of safety specialists. One of the purposes of this in-depth study is to develop improved accident investigation methodologies, including the identification of what types of accident data are important in accident investigations. A second is what types of injury records should be used to collect this data.

In describing some of the concepts related to injury information systems, I hope to emphasize one major point: Our current injury records, despite their many inadequacies, have a great deal of valuable information on them that is not being used. In many cases, the implementation of our concepts about how to abstract, compile, and analyze data from injury records has been greatly limited by the amount of and utility of the information we are currently obtaining from our injury records. I hope to present some concepts that will help us better use the data on our current injury reports.

Let us first briefly review the types of data that are collected under our existing injury information system.

Some of the purposes for which injury information is currently being used are to administer worker compensation claims, monitor industry rates, and to obtain information on causal factors to (1) develop safety programs; (2) develop standards; (3) identify areas for research; (4) develop new countermeasures; (5) evaluate effectiveness; and (6) compare establishments. It may come as a surprise that information on causal factors is not the only reason for an injury information system. Indeed, the primary purpose of our current injury records is to assist in the administering of worker's compensation claims. I say this because, from a functional standpoint, our injury records are designed only to properly identify the injured employee and the accident and to record facts related to establishing that the accident occurred on the job, i.e., that it was occupational. As eligibility for worker's compensation benefits does not normally depend on establishing the fault or cause of the accident, not much information on our current injury records concerns causal data. The NIOSH records study found that only 31 per cent of questions on injury records concerned causal information, while more than 56 per cent involved identifying the employee and the accident, and another 13 per cent of questions merely covered the information needed to calculate the appropriate worker's compensation benefit. Thus, our current injury records can be described as compensation oriented.

Another purpose of our current injury information system effort is to monitor industry injury rates. While identifying which industries have the highest injury rates is an important step in understanding accidents, this data cannot be considered causal information.

The recent Occupational Safety and Health Act specified certain recordkeeping requirements. There are four basic records in the OSHA recordkeeping system. First, there is the OSHA 100, or OSHA Log, which provides a means to list all recordable injuries in the establishments and a means of recording the workdays lost resulting from these accidents. Second, there is the OSHA form 101, or Injury Report Form, called the Supplementary Report of Occupational Injuries and Diseases, on which to record facts about the injury. There is also the OSHA form 102, which provides a summary of the number of occupational injuries and diseases that have occurred during the year in an establishment. Finally, there is the OSHA 103, which is sent to a sample of establishments each year by the Bureau of Labor Statistics. It is used to conduct the survey from which BLS develops its industry injury rates.

Of these forms, only the OSHA 101, or Injury Report Form, has what might be considered causal information on accidents. The law does not require that the employer complete this form. All the law requires is that the employer record the information requested on the OSHA 101 somewhere within its injury records. This is what is meant by calling the OSHA 101 a "supplementary form," i.e., it is used only if the establishment's form does not have all the information required on the OSHA 101. In the NIOSH records study, we found that only 23 of the 620 establishments visited used the OSHA 101 at all in their recordkeeping systems, and only 16 used it as their primary injury record. For this reason, it is best to think of the OSHA 101 not so much as a form, but as a list of the types of information that an employer is required to compile on each injury.

However, despite the law, it cannot be assumed that this type of information is being kept by all employers. Indeed, a review of the primary injury records used by the 620 establishments visited in the NIOSH records study revealed that only 36 per cent of the establishments' forms had all of the OSHA-required information on them.

Moreover, a review of the OSHA 101 shows that most of the items merely concern identification of the accident, and not causal information. For example, such items as the name of the employee, the name of the physician, the name of the hospital, etc., are not of much value in accident research. Only ten of the items on the OSHA 101 can be considered descriptive or causal injury information. Of these, only three have significant research value, i.e., what the employee was doing, how the accident occurred, and the object injuring the employee.

In addition to the OSHA information requirements, our current injury information system includes a voluntary standard for what types of information to record about an accident. This standard is called the American National Stan-

dards Institute (ANSI) Z16.2 Standard Method of Recording Basic Facts Relating to the Nature and Occurrence of Work Injuries. The ANSI Z16.2 standard provides a method and codes for recording eight basic categories of information about accidents. These are the: nature of the injury, part of body, source of injury, accident type, hazardous condition, agency of accident, agency of accident part, and unsafe act. For example, an accident is described thus: "A circular-saw operator reached over the running saw to pick up a piece of scrap. His hand touched the blade, which was not covered, and his thumb was severely lacerated." In this accident, the ANSI Z16.2 system would classify the type of injury sustained as a "laceration," and the part of body as the "thumb." The object which directly injured the employee, or the source of the injury, was a "circular saw," and event in which he was injured, or the accident type, is classified as "struck against." The hazardous condition was "lack of guarding." The object involved in the hazardous condition, or the agency of the accident, was again the "circular saw."

In this accident, the source of the injury and agency of the accident are the same; however, this is not always the case. The part of the agency which had the hazardous condition (i.e., was unguarded), or the agency of accident part was the "blade" of the circular saw. The unsafe act in the accident was "cleaning or adjusting moving machinery."

Many states use the ANSI Z16.2 standard to record information about accidents from injury reports. The Federal Bureau of Labor Statistics, in its new Supplemental Data System (SDS) in which state agencies code data from the injury records and send the coded data to BLS, used the ANSI Z16.2 standard. In addition, many safety engineers in individual establishments use the ANSI Z16.2 standard as the basis for recording information about the accidents they investigate. In many ways, the ANSI Z16.2 standard represents the current injury information system used in this country. It is worthwhile, therefore, to examine the ANSI Z16.2 standard in more detail.

The first point that must be made is that of the eight factors gathered in the ANSI Z16.2 standard, only four of these factors are normally coded and used when abstracting data from injury reports. These are: the nature of the injury, the part of body injured, the source of the injury, and the accident type. These four factors are often the only factors shown in federal and state tabulations. This amount of information is rather minute; in fact, this information can hardly be thought of as causal at all, but merely descriptive. Causal information such as hazardous condition, agency, and unsafe act are not normally recorded. Therefore, we have to ask ourselves whether there are any other data analysis methods that allow us to get more information from existing reports than these four factors.

One problem with the ANSI Z16.2 coding system is that it allows only one answer for each category. This is particularly important for the category "accident type," because accidents are normally a sequence of events, rather than a single event. The ANSI Z16.2 system allows us to code only one event in an accident sequence, i.e., the event which directly resulted in injury to the employee. In terms of analyzing the causes of accidents, often the event which resulted in the injury is not as important as the events which led up to that injury. An accident description taken directly from an undoctored injury report states: "Step ladder tipped over, employee grabbed pipe to keep from falling, burned arm." The accident type for this accident would be coded in the ANSI Z16.2 system as a "contact with temperature extreme," the hot object or source of injury being a pressure line. Some thought will reveal that, in terms of accident prevention, the fact that the employee fell is at least as important, and probably more so, than the resulting burn. Furthermore, the fact that the burn was in part due to an attempt to avoid another injury may be important in understanding burn accidents as well. However, the ANSI system would not indicate that a fall occurred as a part of this accident sequence, nor the recovery event, because only one event in the accident sequence is coded in the ANSI system.

Not only does the ANSI Z16.2 system not record much of the significant information concerning the accident, it does not record all of the information that was readily available on a normal injury report. The way in which this accident is coded in the ANSI system is a good example of how what we learn about accident causation is directly affected by our concepts of how to use data from injury records.

One reason why injury information systems do not normally record the sequence of events in an accident, is that it appears that accident sequences have too many variations. Coding them would require too many classifications.

Handling this problem has been helped by the discovery that each of the single events in an accident sequence is often very similar to the basic accident types in the ANSI Z16.2 system. Many times, all that is necessary to code multiple event accidents is to allow several accident types to be coded, and to code them in order of their occurrence in the accident. The accident under discussion has three events. These are roughly equivalent to three ANSI accident types: "step ladder tipped over" might be coded as "fall from ladder;" "employee grabbed pipe to keep from falling" would be coded as a "bodily reaction" under the ANSI system if this event had caused the injury; and "burned arm" is, or course, a "contact with temperature extreme" type of accident. Finding that the events in an accident sequence are often similar to the single accident types in the ANSI system has made it easier for us to develop injury information systems that allow accident sequences to be coded.

Related to the problem of being able to show accident sequences is the fact that most injury information systems have no way of tabulating accident events that did not directly involve the injured employee and, in addition, of showing how many of the factors involved in the accident relate to each other. For example, in another accident taken from the ANSI standard, the accident is described as: "A forklift went out of control when one wheel struck a piece of stock lumber which projected into the aisle. It ran out of the aisle and struck a machine operator, breaking his leg between the ankle and knee." The ANSI system does not allow us to record that the forklift went out of control. It's true that this event did not involve the injured employee, but it would be important in some types of safety research, such as work on stability standards for forklifts. Nor does the ANSI system make clear how the "improperly placed lumber," which is shown as the "hazardous condition," caused the forklift to strike the employee.

An accident model developed in an article from the Royal Society for the Prevention of Accidents (ROSPA) shows that progress is being made in including these extra events in injury information systems. In this model, an injury is assumed to happen either because of the position or movement of the employee and/or because of the position or movement of an object. For the same accident, the accident type in the ROSPA model is coded as "struck by" and the object is coded as "forklift," as it is in the ANSI Z16.2 system. But the ROSPA information system allows us to mention the all-important fact that the forklift went out of control (under the category "type of movement of the object"). It also shows how the hazardous condition (i.e., "improperly placed lumber") in the ANSI system resulted in the accident by listing "struck piled lumber" as the "factor causing movement" of the object.

Another problem with the ANSI Z16.2 standard is that the system does

not always allow us to record some important details about the accident which are often shown on injury reports. In coping with this problem, we have uncovered an important concept for injury information systems. Types of information needed to describe an accident depend greatly on the basic accident type being described. Our new injury information systems, such as IRIS, therefore, record different pieces of information for each of the basic accident types. For each accident type, we have identified the essential types of information needed for describing that accident type and defined the relationship of each of the types of information to the accident type and to each other. For example, for materials handling accidents, we record the material being handled, factors describing the material, including its size, weight, and degree of control, such as whether it was slippery or whether the material's weight shifted, and the place to and from which the material was moved; e.g., "the employee was lifting a 30-gallon, 80-pound wet container from the conveyor to a cart when he overexerted himself." Of course, not all accident records are this detailed, but many reports on materials handling accidents do record general information on size, weight, or control of the object, such as its being large, heavy, or slippery.

For falls, on the other hand, we record different types of information. We normally record the type of surface on which the employee was located before he fell, its condition, and the type and condition of the surface onto which he fell, if that surface is different. Of course, in our special information systems that deal only with falls, we record many more pieces of information, such as objects on the surface, surface material, footwear, etc. A system which records different types of information for different accident types is thus more flexible for special studies.

Another advantage of this method is that it allows us to identify all accidents related to a given piece of equipment or material. This is particularly useful in the writing of standards, most of which are written to cover a certain piece of equipment or material. Using the four common ANSI categories to code the accident described above, in which the employee lifted a can from a conveyor, the conveyor would not have been identified as a factor related to the accident. The source of injury in the ANSI system identifies only the object which directly injured the employee. Thus in most worker's compensation data using the ANSI system, only the conveyor accidents involving getting caught in a conveyor are identified. In developing standards for conveyors, this problem is apparent because only a portion of conveyor-related accidents are identified in worker's compensation data. Once again, we see how the methods we use to tabulate and analyze injury data limit our knowledge of how accidents occur.

Final advantage of this method of recording different types of information for different types of accidents is that it allows us to include more of the information that is found on current injury records. In our study of injury records on falls, it was found that nearly three-quarters of the fall reports either listed surface type or described the accident so that it could be readily determined.

Another important type of data that is available on about three-quarters of the current injury records is data on activity. Activity is not recorded in the ANSI Z16.2 system. If I were to select the one most significant factor missing from the ANSI Z16.2 system, it would be information on activity. Information on activity is important because it tells the safety engineer or researcher what work processes are involved in accidents. Information on activity narrows the accident researcher's efforts down from an entire industry to the specific tasks in the employee's job that are involved in most accidents.

The usual reason given for not recording information on activity is that the number and variety of activities is too great. In our work on information systems, we have found that it is possible to develop activity codes for accidents involving a wide variety of industries. To do this, we have developed a subcategorization system that allows detail but makes generalization possible when using multi-industry data, We have simplified the classification of activity by separating out the activity from the objects involved in the activity. In recording activity information, we have found it useful to record five types of information on activity. These are: Purpose of Task, Task, and Body Position; and two objects involved in most activities: the object the employee was working with, and the object the employee was working on. For example, in an accident report, the employee was: "squatting down repairing a conveyor with a wrench." Thus, the purpose of his task was "repairing," his task was "using handtool," his body position was "squatting," the object the employee was working with was a "wrench," and the object that the employee was working on was a "conveyor."

Many of the information systems which do record information on activity record only body position rather than task. For some types of accidents, the body position of the employee is an important factor. For example, an employee who is squatting is probably at a greater risk of losing his balance. In a fall accident, the fact that he was squatting may be an important piece of information. However, to only record the body position without the task involved has the same problem of recording the accident type without activity: namely, that information on body position does not relate the accident to the specific work procedures in the employee's job.

In addition to recording task, we have found that it is necessary to also record the overall purpose of the task. In a review of 500 reports of accidents in sawmills, we started by coding only the task and did not include the purpose of the task. However, we noted that a large fraction of the accidents which had had the task coded as "using handtools" were cases in which the employee was involved in repairing equipment. As a result, we went back through the injury records and coded for purpose of task as well as task, and found that nearly one-quarter of the accidents in the sawmills occurred while the employee was using a handtool to repair equipment or fix a jam. Once again, what we learn about an accident is affected by what we decide to record about the accident. There was nothing inaccurate about coding the activity for these accidents as "using handtool"; because we also recorded the handtool itself, this classification for activity is even more detailed than simply stating that the employee was "repairing equipment." Yet, by recording only that the employee is using a handtool and not including the purpose for which he was using the handtool, we would have missed a very significant finding about accidents in the sawmills.

Although much work still needs to be done on recording activity in an injury information system, it appears to be an essential factor in developing injury information systems because of its high potential utility in understanding the causes of accidents.

In concluding this discussion of the types of information that might be included in an injury information system, I would like to emphasize the importance of one type of information that is too frequently forgotten or misunderstood. This is hours of exposure data. Many of you are familiar with some types of hours of exposure data such as the total number of hours exposed for all of your employees in your establishment. In terms of accidents, hours of exposure normally means, simply, total man-hours worked. However, few people realize that total hours of exposure data must be broken down and related to all the factors on which we gather injury information, whenever we use that information to make comparisons.

Many times, persons analyzing data

fail to consider the differences in hours of exposure among the groups they are analyzing, and thus simply tabulate the number of injuries involved rather than calculate a rate which will consider the differences in hours of exposure.

For example, one of our participating establishments in the IRIS program had been examining the effect of experience on injuries. Because he had considered only the number and per cent of injuries, and not included hours of exposure data, or developed rates, he had quite erroneously concluded that it was the more experienced employees that had the greater injury problem. He had based his conclusion on the finding that 50 per cent of the injuries in his establishment occurred to employees with over two years experience, while employees with less than six months' experience had only 28 per cent of the injuries. His data was perfectly accurate and true, but he had been led to a false conclusion by failing to recognize that the plant employed six times as many employees with more than two years' experience as employees with less than six months' experience. The number of hours worked, or hours of exposure, by his employees with less than six months' expe ience was only 12 per cent of the total hours worked, while employees with over two years' experience had worked 74 per cent of the total hours of exposure. Thus, employees with more than two years' experience did l ave 50 per cent of the injuries, but these injuries occurred to 74 per cent of the employees, while in the case of employees with less than six months' experience, 12 per cent of the employees were having 28 per cent of the injuries, or more than double "their share." When this data is calculated into injury rates, we find a conclusion exactly opposite that which was derived by looking only at numbers of injuries without hours of exposure data: The OSHA incidence rate for employees with less than six months' experience in this establishment is over three times that of employees with more than two years' experience. Thus, compiling hours of exposure data and using it in rates is not simply a statistical nicety: It is often essential to avoid making potentially extreme errors in analyzing injury information.

I would now like to talk about a novel concept for analyzing data. One of the main barriers that has limited the development of more detailed injury information systems, such as ones which show accident sequences, is the problem of how to tabulate and portray multi-factor data on accidents. The traditional methods for portraying data are tabulations of single factors or cross tabulations between two or possibly three factors. As we have seen, there are often more than three factors contributing to an accident.

Our work on injury information systems has led to the development of a novel method for tabulating and portraying multi-factor data. We call this method a profile. A profile is a computer-generated sentence. It is made up of several injury factors that are strung together in a strict format, using connecting phrases which make the sentence intelligible and show the relationship between the factors. An example of a computer-generated sentence, or profile, reads: "Struck by object while carrying object injuring leg resulting in cut." This profile is made up of four factors—accident type, activity, part of body, and nature of injury—which are made into a sentence by the computer by using three connecting phrases—"while," "injuring," and "resulting in."

Profiles can be expanded to give as much detail as needed. For example, here is the same accident expanded to a profile made up of seven factors. By including the "object of the accident," "the condition of the object of the accident," and the "object of the activity" in our profile, we found that almost all accidents of this type in the solid waste industry were cases in which the employee cut his leg while carrying a plastic bag which had glass or another sharp object protruding from it. Thus, the computer-generated profile may be used to give progressively more detail on an accident so that we can narrow down our analysis to the significant factors that distinguish one accident type from another.

We have developed computer programs that will search through our injury data, find each combination of the factors included in a profile, and tabulate the number of injuries, the days lost, and the cost for each exact combination. Thus, it is possible to determine just how many accidents with a given combination of characteristics there are among a certain set of injuries. For example, these profiles tabulate the number of accidents involving a certain combination of six accident factors. It would be very difficult using other methods of portraying data, such as cross tabulations, to correlate and tabulate data on six factors in a readily interpretable form.

In addition to being able to combine and tabulate many types of information about a given accident type, the profile is uniquely valuable in tabulating accident sequences. For example, our previous accident, described as "step ladder tipped over, employee grabbed pipe to keep from falling, burned arm," becomes a three-part profile showing the three events in the accident sequence: "Fell from moving or tipping platform," "attempted to recover balance," and "contacted hot object."

The profile enables us to show the accident sequence in the order in which it happens and show the relationship between each event. Moreover, because profiles are sentences, they tend to portray data in the same format that a person describing the accident would use in completing an injury report. The profile thus makes it possible to use more of the data on injury reports, including some of the intricate causal relationships and implied meanings that often are very clear in sentences but are lost when sentences are severed into single word fragments.

We have talked about what types of data we should gather from injury records and the methods used in analyzing them. Finally, I would like to suggest a novel way to collect injury data.

The traditional way of gathering data is to use an injury report form. This method has many difficulties. First, the injury report form cannot be too long or people will not complete it. As a consequence, it is not possible to cover much information on injury report forms. Secondly, the answers given on injury forms are often incomplete. The use of multiple choices on forms has been tried to combat this problem, but this forces the person completing the form to classify and code information about injuries. Unless people are highly trained, they will choose multiple choices differently. This means that data on multiple choice forms is often as inaccurate as data on open-ended forms is incomplete.

In working on the IRIS industry-wide injury information system, we have developed an innovative concept for reporting injury information that has resolved some of these problems with injury report forms. We call this system the "telephonic injury reporting system." In it, injuries are reported to a central office from 100 establishments across the country by telephone.

The telephonic injury reporting system works this way: Each of the 100 establishments reporting injuries on this system is sent a one-page list of the type of information to report by phone. This list lets the establishment know the information they must have ready when they phone in an injury. When the establishment phones in an injury, a trained injury analyst answers the phone and asks the establishment the questions that are on the list. The injury analyst then asks the establishment any additional questions needed to clarify the answers given by the establishment. The telephone report of the injury is recorded on a tape recorder as it is taken over the phone. Later, an expert coder, who is

trained in all the complexities of constantly classifying and coding injury information, listens to the tape of the telephone injury report and codes the information onto a computer entry sheet. The codes are then entered into the computer and the injury is ready for computer processing.

The telephonic injury reporting system has many advantages. First, the injury information given over the phone is limited to only the questions related to the particular accident type being reported. As I have explained, we gather different information on each different accident type. If an injury form was used, we would have to include all of the questions for all of the accident types on the form. By using the telephone, it is possible to limit the questions to only those involved in the particular accident being reported. Second, and partly because of this, the telephone reporting of an injury is faster than the completing of an injury report form. It is taking only two to three minutes to report an injury by phone. In the IRIS system, the telephone injury-reporting system allows us to take injury information in about one-fifth of the time it took to complete an injury report form with comparable information. The telephone injury-information system thus makes it practical to gather extensive data. Third, the data we receive on injuries by phone is by far more detailed and accurate than what we received by injury report forms. The reason is that we can edit the injury data reported over the phone as it is reported. The fourth advantage of the telephonic reporting system is that the injury information is coded by a person expert in the art of consistently classifying injury information rather than the person completing the form. The analysts who take the information over the phone listen to the description given by an establishment with an ear to determining whether enough information has been given to adequately code the accident. Thus, the telephonic system enables us to use complex injury classification methods which would be impossible with injury reports.

We have found that the costs of reporting injuries by phone is no more expensive than using injury report forms for the establishments reporting injuries and is far less expensive for those involved in processing and analyzing data. The establishment pays for the phone calls when they report injuries in our IRIS telephonic reporting system, but their cost to phone in an injury is made up by the fact that they spend only about one-fifth of the time they would spend to complete an injury report form. From the injury analyst standpoint, the telephonic information system is cheaper because it takes far less time to process the data, which comes in already edited and ready to code. The last but not least advantage of the telephonic reporting system is that reporting injuries by phone is simpler and easier. Most establishments find it more appealing to report injuries by phone than to complete additional forms on injuries and as a result are more willing to report injuries. Moreover, phone reporting enables those who are analyzing injury data to have frequent contacts and better communication with those who are on the scene of the accident.

The concept of a telephonic injury information system is currently being used in a nation-wide study. However, many safety professionals with large or multi-located establishments may find this concept useful in their own company injury information systems.

We have been discussing some complex points. First, we noted that injury information systems are important because our ideas about the causes of an accident can often be greatly influenced by the way we gather and analyze data from injury records. We found that our current injury records contain a great deal of information that is not being used. Currently our injury information system is based largely on the ANSI Z16.2 system and only four types of data are normally abstracted from injury records and tabulated. These are nature of injury, part of body, source of injury, and accident type. Often, injury records contain more than these four types of data, and our discussion thus included some concepts of additional types of data to abstract from injury records.

Some methods for gathering data on the sequence of events in an accident were discussed and some important details on accidents, which are often included in an injury report and which should be compiled and analyzed in an injury information system, were identified. The importance of data on activity in providing a means of linking work processes to accident causes was pointed out. The example of injury rates by experience was given to show how data on hours of exposure is often needed to avoid erroneous conclusions about accident factors. In addition, some novel concepts for tabulating and analyzing data were evaluated. We noted the value of gathering different types of data for different accident types. We found that this method enabled us to gather more detail about the accident and to use more of the information that is on our current injury records. The concept of profiles or comptuter-generated sentences which enable us to tabulate and show the relationship between many types of information on accidents was introduced. We found that the way data is portrayed in profiles is often very similar to the way accidents are described on injury reports.

Finally, a novel concept for collecting injury data, that of reporting injuries by phone, was described. A telephonic injury reporting system often has the advantage of obtaining more detailed and more accurate injury data in a faster, cheaper, and more enjoyable manner than can be obtained using injury report forms. The telephonic system also increases communication between those at the site of the accident and the injury analysts.

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THE PREVENTION OF FALLS IN PUBLIC PLACES

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Each year thousands of accidents occur which cause injury or death to people. Falls are one of the major accident killers in the world. They kill more people than any other kind of accident except traffic accidents. They happen to the worker, the customer, or the guest. They happen to the young and to the old. Nearly all deaths and injuries from falls can be prevented when some simple safety precautions are taken. My presentation is two fold: (1) actions to be taken to prevent falls accidents; (2) actions to be taken to minimize claims.

What is necessary to prevent fall accidents? One major area is preventing hazards that cause falls. To prevent these hazards you must be able to recognize them. Let's look at some conditions that cause falls.

Clothing can often present fall hazards. Floppy pant legs, sagging cuffs, or hems create trip and fall hazards. What kind of shoes do your workers and customers wear? Are they old and beat up? You have no control over your customers, but you can control your workers. Have your workers wear well made shoes with slip-resistant soles and heels.

More people are hurt falling from the same level than from a different level. Have you ever seen people walking who are not watching where they are going? If you see this condition, caution the people. Usually the person is preoccupied with something, and a word of caution will return their attention to watch where they are walking.

Items on the floor and equipment sticking out of walkways and aisles can contribute to accidents and injuries. Just a little paper clip or pen on the floor can really throw a person for a loop. If you see something on the floor, pick it up and put it away so someone will not fall over it. If there is something sticking up from the floor such as a phone box or electrical outlet, place some furniture near it so it doesn't present a tripping hazard.

Many falls are caused by tripping over wires and cords. If you notice a wire or cord laying around where someone can trip over it, move the cord or report it to higher authority if necessary. If you don't move it, you could be contributing to someone else's accident.

Other tripping hazards you will find would be loose tile, raised carpets, or rough places in the floor covering. When you see one of these hazards, be aware of the potential fall danger to yourself and your guests. Pay particular attention to heavily traveled areas where guests and customers are frequent travelers.

Always be on the lookout for hazardous conditions when you are walking through an area, and train your people to also be on the outlook. This includes wiping up spills on the floor. Instruct your people to remove, highlight, and report any spills or wet conditions they see. When you wash floors, place a "Caution—Wet Floor" sign to warn people walking in the area and, as an added protection, rope off the area being cleaned. When necessary to move objects while cleaning, place them where they will not cause anyone to fall. Return them to their proper places as soon as possible. Floors should be cleaned when traffic is lightest whenever possible. Wet down only a small part at one time and dry mop immediately after washing.

Spills or leakage from trash bags create another slip and fall problem. Place waste trash bags on another piece of plastic so the liquid cannot get on the floor or else in a container.

Jokers and pranksters can cause problems too. A person can startle another person with a loud noise, or purposely bump someone and cause them to fall and perhaps be injured. These jokers are not funny. Caution your workers on the consequence of practical jokes and to be on the lookout for the practical joker.

If people fall down something, it will most likely be stairs. People fall down stairs for many reasons. Some don't hold the hand rail. Some take three steps at a time because they are in a hurry. Some try to run down stairs. Always walk and hold the hand rail. By holding the hand rail they can prevent taking a bad tumble if they slip. Again, caution those you see violating this safety rule.

Often people try to carry something too big down the stairs and have difficulty seeing where they are going. Caution employees to always look in the direction they are going and avoid carrying objects which will obstruct their vision. Not only could they fall, but they also could collide with a customer. If you see customers walking down stairs carrying too large a load, help them out.

People fall over things laying on the stairs, too. Don't leave anything on the stairs yourself, and if you find something, pick it up and report it. You can save someone else an accident. Another thing to remember is to have your people report any defective stairs or hand rails they might see.

Pay particular attention to heavily traveled areas such as entranceways to the building, main lobby area, stairways, entrances to elevators or escalators. Check for the cleanliness of the floor. Are passageways free of boxes, carts, tools, and other objects that might cause someone to trip and fall? Are passageways free of substances such as water, oil, produce, and the like? Are passageways free of excessive wax? Check these areas, particularly after waxing operations, to detect any slippery areas from excess wax.

Inadequate lighting is a major cause of falls. Check your lighting. Are the lights in proper operation? Is the lighting adequate for the inside hallways and/or landings? Do you have proper lighting at the entrances and exits? If you have a timing device to turn on lights, check to make sure that it is operating properly. We have frequently investigated accidents that have occurred because the timing device was not adjusted for early darkness or cloudy conditions or because no one checked the timing device to determine that it was working properly.

Check outside areas such as walkways, parking lots, rear of buildings. Are they free of debris and maintenance equipment? Are parking lots free of defects in paving? Is there adequate lighting in these areas?

Signs and posters are important. They are posted to give warnings of danger, to provide directions, and the like. It is therefore important that they be seen. Periodic inspections are a must to determine that the signs are legible, well lighted, properly secured to their location, and do not create a tripping hazard themselves.

As we approach the winter season, a number of vital areas also need inspection. Although not an inspection area initially, arrangements are needed for snow removal services with clear instructions as to when it will be done. Will the removal service plow only the driving lanes, or will the snow be removed from areas between parked cars? Are areas to be salted or sanded? Who will sand and salt the outside stairways, steps, and landing? Who checks to determine that the snow removal and salting and sanding operations are adequate?

We could expound at length on many other areas of inspections, but I believe you get the idea. Self-inspection is very important to prevent the slip and fall type accident. It is important to go one step further after the self-inspection. Make a written record of your inspection as to your findings and any action taken.

The inspection is just part of the job. As imperative as it is to inspect the premises for defects and hazards that might cause accidents, it is important to record exactly when and by whom inspections are made. This provides a permanent record as evidence that the inspection was initiated, the findings authenticated, and the correction action taken.

Next, let's look at the action you should take following an accident. You have tried hard to prevent accidents, but in spite of everything you have done, an accident has occurred. What then? Immediately following an accident, your first concern should be to the injured customer or guest. The following actions should be taken:

1. Offer help to the injured party and make him or her as comfortable as possible.

2. Show concern for the injured party, but do not admit liability or agree to accept responsibility.

3. If the injury appears serious, call a doctor and, if necessary, an ambulance. Do not attempt to move a seriously injured person.

4. Offer to call a member of the family.

You can help reduce the cost of accidents by remembering and applying six simple words when an accident happens or when you are informed that a claim is being filed: "I keep six honest serving men, they taught me all I know. Their names are What and Where and When and How and Where and Who."

Let's look at each of these briefly to see what each constitutes.

Who is involved? Who was hurt? Secure particulars as to name, address, and telephone number and the nature and extent of the injury. Who saw it happen? Secure names and addresses and telephone numbers of all witnesses who were present and saw the accident. Who first heard about it and went to the scene? Identify and secure names and addresses of all "after arriving" persons, including employees who have knowledge of the area or the object in question.

If the accident occurred in the produce department of a grocery store, was the produce manager responsible for the inspection? Did he make regular inspections or did he delegate responsibility to another? If delegated to another, who was that person? When did he last survey the area for foreign objects, hazards, etc.?

What happened? Exactly what? Be specific, don't guess, get the facts. What was the injured person doing when injured? If possible, have the injured party indicate what may have been the cause.

When did it happen? Determine the exact time of day.

Where did the accident happen? Determine precisely the particular part of the premises. Don't generalize.

How did it happen? Explain all the elements leading up to the actual occurrence.

Why did it happen? There is always a cause and effect factor. What, specifically, caused it? Inspect the area in which the accident occurred and determine the condition of the accident area with reference to presence of foreign matter on the floor or stairs, obstacles in the walk area, torn carpet, water on the floor, etc.

Was the accident caused by the injured person's inattention? Did he or she have an armload of packages? Wear glasses? Did the condition or type of the person's shoes contribute to or cause the accident? Determine if there were high heels, platform soles, sandals, shoes badly worn, or any other identifying information. Check to determine the presence of any substance on the soles of the shoes. If so, does it appear to have been brought from an outside area? Was the accident caused by another's action? Keep asking yourself the question "Why?" until you have exhausted all the why's.

These items may appear to involve you extensively; however, they are facts you must know to help defend the case if necessary. It also makes you aware of conditions that should be corrected to prevent the accident from happening again. These facts are necessary while they are clearly perceived and while they are accurate.

Briefly, to recap: (1) safety evaluation with self-inspections; (2) keep records; (3) prompt accident investigation. These basic steps should save you money, time, and worry. They do help prevent fall accidents. You also will be likely to preserve good customer relationships.

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NEW YORK CITY'S WINDOW FALL PREVENTION PROGRAM

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"They are small tragedies. There is a stillness about them—the room, the child, the open window, the child suddenly not there, falling; a fleeting glimpse against the sky, any cry lost in the vast spaces of the city. A shocked pause, people running, the small form motionless—and then the growing wail of the ambulance." This quotation from a front-page article in the June-July 1974 issue of *The New York City Housing Authority Journal,* headlined CHILDREN CAN'T FLY! expresses the shock, the grief, and the endless years of guilt and reproach caused by an urban epidemic of children falling from unguarded open windows.

In 1971, staff of the New York City Department of Health[1] published results of a study for the period January 1965-September 1969 showing that falls from heights were responsible for 12 per cent of all accidental deaths among children under 15 years of age and that window falls were responsible for 123 deaths. However, the death toll was only a part of the picture, because non-fatal falls obviously resulted frequently in injury as tragic as or even more tragic than fatal falls if one considers the trauma and the devastating economic and emotional drain on parents and society for treatment, aftercare, and rehabilitation.

Convinced that the reported mortality statistics, to say nothing of the morbidity statistics, reflected only the tip of the metaphorical iceberg, the Health Department in 1972 launched a pilot prevention program as the research component of its educational "Children Can't Fly" program started the previous year in the Tremont Health District of the South Bronx.

To quote a 1973 intra-office Health Department report,[2] "This is an area where the epidemic proportions of the 'skydiver syndrome', as it was known in Bronx emergency rooms, had gone unrecognized by all but the busy pediatric staffs of the larger municipal hospitals in the Bronx."

The pilot program combined research with community services, developed a volunteer reporting system, and demonstrated ways of reducing the incidence of window falls through education, consciousness raising, outreach services, and providing free window guards. Basically, the program included the following components:

1. Data Gathering: reporting of window falls by police precincts and hospital emergency rooms by postal card forms provided by the program. Follow-up included home visits to victims' families by public health nurses.

2. Media Campaign: awareness elevation and prevention education through radio and TV public service spot announcements, news stories, editorials, special news coverage, etc.

3. Community Education for Prevention: outreach workers going door-to-door, involvement of community groups and public and private agencies.

4. A Prevention Service: distribution of easy-to-install free window guards to families with pre-school children, living in tenements in high-risk areas.

By the second summer the fourfold approach appeared to be having an effect, because a downward trend in the incidence of window falls was noticeable. It became clearer than ever that the hazard of children plunging from open windows was a grim and serious health problem--but a preventable one—affecting the lives of more youngsters and their families than most people realized. It also became clear that a reliable reporting system was imperative if the scope of the problem was to be realistically assessed.

Significant progress was made toward improving the voluntary reporting mechanism when the "Children Can't Fly" program was modified and expanded throughout 1974 and 1975. By dint of unrelenting pleading, nagging, and persuading, the goal of year-round reporting by an appreciable number of hospital emergency rooms (63) and all 73 police precincts was gradually achieved. Home visit follow-ups by public health nurses provided detailed family profiles, demographic and sociological information, counseling and referral services, and identification of potentially dangerous conditions.

The counseling services provided by public health nurses covered a broad spectrum of health information and were an invaluable adjunct of the data-collecting procedure. Counseling was done, the family was registered for window guards, cautioned about possible latent symptoms related to accidents, and alerted to the importance of clinical follow-up. Environmental hazards were identified, the importance of precautionary parental surveillance stressed, and the nurse was always on the alert for imminent and potential problems such as hyperactivity, lead poisoning, emotional instability, inability of the parent to cope, physical or mental retardation, etc. When any of these symptoms was observed or suspected, the nurse recommended remedial measures, made referrals, and prescribed appropriate follow-up.

To elevate awareness of the public in general and parents in particular to the hazards of open, unguarded windows and to accident prevention measures, there was concerted action to arouse public concern by utilizing public service time slots, special news programming, children's TV programs, and by seizing every opportunity to issue news releases and stories to the English and Spanish media, agency house organs, and community newspapers, fliers, and pamphlets. Widespread distribution of multi-lingual fliers and posters—English, Spanish, Chinese, and Haitian—was made through a network of health centers, hospitals, pediatric clinics, police precincts, PTAs, headstart programs, churches, and a large number of community-based organizations.

Over 16,000 window guards were furnished free of charge to 4,200 families each year, particularly in the high-risk areas. Environmental health personnel provided manpower for the installation of about one-fourth of the available guards. The remainder were distributed for self-installation, after which outreach personnel made inspections to ascertain whether the guards were installed properly and in the appropriate windows.

In 1974 there was a city-wide decline of 34 percent in reported falls compared with 1973. Moreover, there was a 42 per cent decline reported for the critical months June through September. But in 1975 there were 159 falls reported, representing a 20.4 increase in the incidence of falls reported city-wide compared with 132 falls in 1973.

As with any voluntary reporting system, one should take note of the limitations of the data collected. Fluctuations might conceivably be due to changes in the interest or personnel of the reporting agencies involved. Hence a downward trend in the number of falls reported may not necessarily be a reflection of a downward trend in the number of falls actually occurring. Deaths, however, are more accurately reported. It is suggested, therefore, that if the

number of falls is in fact declining, this will also be reflected by a decline in the number of deaths due to falls.

Indeed, the number of deaths of children due to falls from heights in the city has in fact declined from 57 in 1973 to 45 in 1974 to 37 in 1975, a decrease of 35 per cent since 1973. This decrease in mortality is further independent evidence that a downward trend in window falls is occurring, apart from any fluctuations in the numbers being reported. It should finally be noted that continued efforts are being made to improve reporting.

In assessing reasons for the higher number of falls, one must take into account such factors as the increase in the number of reporting institutions and climatic excesses, i.e., more days of higher temperatures when windows are opened. Another factor contributing to the city-wide increase was an unprecedented number of falls reported in Brooklyn, where the incidence jumped from 35 to 70 in one year. This phenomenon was most prevalent in the Bushwick area, where falls jumped from eight to 35, and in the Crown Heights-Bedford area from five to eleven. Although none of these falls was fatal, the increase is quantitatively dramatic. Nurses, hospital emergency room personnel, and staff of the City Planning Commission attributed the increase to the fact that there is a highly mobile and changing population in these areas. A profile of the area also revealed an 80 per cent yearly turnover in schools, high drop-out and truancy rates, many single-parent families and unwed mothers, excessive fire hazards, a high illiteracy rate, the second lowest reading scores in the city, drug and alcohol abuse among youth, a higher birth rate than the city norm, high infant mortality, child abuse and neglect, and an apparent unresponsiveness of the population to community organization and involvement.

The increased number of falls in Brooklyn, where the "Children Can't Fly" program with all its components was not concentrated as intensively as it was in the Bronx, offered food for thought and suggested that there were significant control factors operating in the two boroughs. Moreover, the number of participating agencies in the Bronx that reported was relatively constant. Thus the Bronx served as a model for evaluation, and the statistics were impressive. From 1973 there were 108 falls, and in 1974 they declined to 64. In 1975 falls further declined to 54. A 50 per cent decline in falls during the three-year period!

Compilation of data gleaned from home visit reports which provided family profiles and environmental information indicates a strong correlation between the incidence of falls and the economically disadvantaged population who reside in substandard housing. Add to this overcrowding, instability of family life, supervisory and/or environmental hazards, and the tensions flowing from a "pressure cooker" existence, and one perceives the prototype of the setting responsible for generating many of society's social ills, including the hazard of window falls.

The cost of injury from falls is appalling. For the two-year period 1974-75, inpatient cost of treatment for victims of falls in New York City was $544,905 for 170 cases. This figure does not come close to covering the cost of emergency room treatment, nor the cost of aftercare, rehabilitation, and maintenance of the severely and permanently disabled. But dollar cost alone is hardly a measure of the human suffering inflicted on families and on the children who must spend the rest of their lives as public charges, brain impaired, blind, without limbs, or maimed by loss of vital organs. Between February 1973 and September 1976 the number of window falls amounted to 696. Death claimed 98. And these are only reported falls. Only God knows what is under the tip of that iceberg.

Faced with the escalating demand for

services and the inability of the Health Department to continue indefinitely providing window guards for the millions of homes that should have them, the Commissioner of Health brought the problem to the sympathetic ear of the New York City Board of Health. The "Children Can't Fly" program, a collective effort of many bureaus and offices, involved child health, nursing, environmental health, health education, information, biostatistics, outreach, and administration. Although severely curtailed by the city's fiscal crisis, staff could continue providing data gathering, media coverage, community education, nursing consultation, outreach visitation, etc., but it was obvious that, financially, continuing indefinitely to distribute guards was out of the question. The pilot program had demonstrated that a modality combining human services with a safety device afforded effective prevention in the areas selected. Now it was time to move toward citywide prevention and to engage property owners in the effort. For years landlords had been required by law to eliminate hazards to the health of their tenants, such as lead paint, electrical outlets, and gas refrigeration. Why not the hazard of children falling from windows?

On April 12, 1976 the New York City Board of Health unanimously passed an amendment to the New York City Health Code requiring owners of multiple dwellings to provide window guards in apartments where children aged ten years and under reside. The window guards would have to meet Health Department standards, also have to be placed in windows located in the public halls of such buildings. Exempted from the requirement were windows giving access to fire escapes. Moreover, the amendment required that all window fall incidents involving children 16 years of age and under be reported to the Department of Health. After years of frustrating efforts to collect data through voluntary reporting, here, at last, was a law mandating it.

The law further decreed that window guards be installed incrementally according to a three-year plan in which high-risk areas must be in compliance by the end of the first year, moderate-risk areas by the end of the second year, and the remainder of the city by March 31, 1979.

It would be wrong to assume that once the law was enacted its implementation could be taken for granted. Like all new regulations, it was challenged in the press and in the courts—by real estate agencies, by landlords, even by other city agencies, often on the premise that it "unduly infringes on the area of parental responsibility," as an irate letter to the editor of the *New York Times* alleged, and to which the New York City health commissioner responded, "Does this argument have intellectual substance? If so, then in a similar manner the Health Department's concomitant insistence of the use of non-lead paint also 'unduly infringes on the area of parental responsibility. After all, it's the parents' job to prevent their children from gnawing the paint on window sills, just as it is their responsibility to prevent their children from climbing up on these same window sills and falling to their deaths."[3]

Another distinguished public health authority, former New York City Health Commissioner Dr. Leona Baumgartner, once said, "If someone invented a drug that would cure half the present cases of cancer, the excitement would be beyond belief. We have such a drug—and I am completely serious: it is communication."[4] In her address before the National Health Forum Conference, Dr. Baumgartner went on to equate communication and education as indispensable handmaidens of medicine in the cause of prevention. If communication and education as indispensable handmaidens of medicine in the fall prevention program must qualify for listing in the public health worker's equivalent of the *Physician's Desk Reference*. Such an edition might well include a product called

"fenestramyacin," a vaccine whose principal ingredients are one part education, one part communication, and one part window guard.

Although current nationwide data on the incidence of window falls are not available, it is encouraging that the National Safety Council was sufficiently interested in the "Children Can't Fly" program and the resulting legislation to invite the authors to present this paper at your 1976 National Safety Congress. In view of the significant and promising reduction in falls directly attributable to the educational program and the installation of guards, may it not be hoped that other cities where similar conditions prevail will recognize window falls as a public health problem of major magnitude and take steps to avert the tragedies and waste that result from this kind of accident?

REFERENCES

1. Bergner, Mayer, and Harris: "Falls from Heights: A Childhood Epidemic in an Urban Area." *American Journal of Public Health*, Vol. 61, No. 1 January 1971.
2. Gantt and Booth: "The Children Can't Fly Program—A Community Health Education Model in Window Fall Prevention."
3. *The New York Times*, May 24, 1976.
4. Speech on "Wealth Communication." National Health Forum Conference, March 14, 1961.

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