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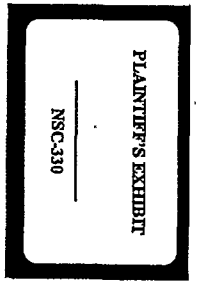



National Safety Council

65th NATIONAL SAFETY CONGRESS

Papers Delivered in the Public Utilities Sessions

How OSHA Decisions Affect the Utility Industry ..... *Robert D. Moran* 5

Getting Wired In On Eye Safety ..... *James E. O'Neil* 11

The Hidden Relationship Between Employee and Public Safety ..... *Alex Pierson* 15

Interest-Maintaining Activities ..... *Harry W. Becker* 21

Motivating Employees to Work Safely ..... *G. Stephen Lyons* 25

Motor Vehicle Safety ..... *Calvin N. Troudt* 29

Officers of the Public Utilities Section, 1977-78 37

Dates for the 1978 National Safety Congress & Exposition 39

Other Volumes/Order Blank for 1977 NSCTransactions ..... Back Cover

78 2109

Public Utilities Sessions

HOW OSHA DECISIONS AFFECT THE UTILITY INDUSTRY

By ROBERT D. MORAN
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The short answer to the question, "How OSHA decisions affect the utility industry?" is that they affect this industry no differently than they affect all other industries. One of the leading cases under the Occupational Safety and Health Act just happened to have involved a utility company, Cape & Vineyard Division of the New Bedford Gas and Edison Light Company, but that decision affects every employer in the country whether he is involved in aerospace, chemicals, wood products, or what-have-you. By the same token, the utility industry is directly and profoundly affected by the Atlas Roofing case, the Society of the Plastics Industry case, the Alsea Lumber case, the National Realty and Construction Company case, and thousands of others.

John Donne, one of the lesser known figures of English literature, who lived some 400 years ago, once wrote a stanza beginning with the often-quoted phrase, "No man is an island," and concluding as follows:

> Any man's death diminishes me
> because I am involved in mankind;
> and therefore never send to know
> for whom the bell tolls; it tolls for
> thee.

These words of wisdom apply to OSHA as well. It is a single act of uniform application throughout the country. Each decision interpreting the Act applies to all employers covered by the Act.

I doubt if any bells were tolled in Gainesville, Texas or any where else last month when an OSHA case was decided against the Mercer Oilwell Service Company, but I can assure you that if they did, they also tolled for you.

litigation

That case involved a rather simple fact situation: a youthful employee's failure to wear a safety belt despite a company work rule requiring it. The company claimed it was unaware of the incident which occurred at a remote oil well drilling site and, consequently, it could do nothing to prevent it. The employee's supervisor, who also supervised two other wells, was not present when the infraction occurred. Nevertheless, the Review Commission held that the company was in violation of the law because there was another employee present at the time who, though not a supervisor, was found by the Commission to be "in charge" of the site in the supervisor's absence.

Even though that may be stretching things a bit, the rule of the case was far more remarkable, for it extended an employer's job safety responsibilities into the realm of the impossible. The Commission ruled that "the actions and knowledge of supervisory employees are imputable to their corporate employer for the purpose of establishing employer knowledge of violative conditions and practices."

In other words, if truck drivers of your company must fasten their seat belts while driving but fail to do so in the presence of another employee who can be said to be "in charge" of the truck at the time (this could be the driver himself), *you* have violated the law.

Maybe you wonder how OSHA discovers these situations when the employer himself has no way of knowing

about them. Well, obviously, OSHA has no way of knowing either. They come to light after-the-fact as the result of an accident investigation.

The pertinent question, however, is not "how," but "why." Why does OSHA cite employers for infractions committed by employees which those employers are powerless to prevent? Well, I submit that the answer goes right to the core of OSHA's operating philosophy: It wants to show the public—and the Congress—that it is doing something about industrial accidents. Since it can't show it is satisfactorily performing its only reason for existence—preventing job accidents and illnesses—it does what it perceives to be the next best thing: it issues citations whenever accidents happen.

Now if we forget the Act for a minute and the reason why Congress enacted it seven years ago, we could easily justify the issuance of citations against employers based on the negligence of subordinate supervisors. There exists in the common law a doctrine known to lawyers as *respondeat superior*. It means that a master is responsible for the wrongful acts of his servants. If a car salesman sells you a lemon, for example, his employer, the car company, would be liable to you. That is both just and sensible. You were doing business with the company. The salesman was th: company's agent.

This doctrine, however, is neither just nor sensible under OSHA. The sole purpose of the Act is to prevent job accidents and illnesses, not to penalize or recover damages from the places of employment at which accidents occur. I know that there are those who will say that the best way to prevent future infractions is to give stiff penalties for present infractions—but that theory has never been proved. If the theory were valid, the most careful drivers would be those who had received speeding tickets in the past. This just isn't true. The presence of traffic cops will restrain speeders, but the memory of past fines, by itself, won't prevent speeding.

Occupational safety and health, as you well know, is much more complex than regulating highway traffic. There are few, if any, employers who know exactly what they are supposed to do in order to prevent all occupational hazards. That's why some of them hire safety experts. I'm told that there are even differences of opinion among safety professionals as to what should or should not be done to insure a safe workplace. But even a routine function like fastening a safety belt can pose complexities when put in the context of this act. If the Act permitted penalties against employees who failed to fasten their safety belts, then perhaps fewer infractions might result. That is not possible under this law, however, because only employers can be cited under OSHA.

This brings us to the key question: What must an employer do—in advance— to make sure that employees wear safety belts when they are supposed to? I emphasize the words "in advance" because the purpose of the law is preventing accidents. We tried to solve this problem with automobile drivers a few years ago. You remember, I'm sure, the seat-belt interlock system. People didn't like them, so their representatives in Congress got rid of the requirement. In the absence of that type of system, however, there is just no way an employer can make sure his employees wear safety belts each moment they are supposed to be wearing them.

Let me make that point clear. A hazard consisting of conduct by employees cannot be totally eliminated. Even the Coal Mine Safety Act, which does permit employee punishment, has not succeeded in eliminating unsafe employee acts from the coal mines.

The first-stated purpose of the OSHA law is to encourage employers and employees in job safety efforts. Nowhere does the law state that one shall be responsible for the misconduct of the other. In fact, the courts have said just the opposite. In 1975 the United States Court of Appeals for the Ninth Circuit stated the following in an OSHA case:

> We fail to see wherein charging an employer with a . . . violation because of an individual, single act of an employee, of which the employer has no knowledge and which was contrary to the employer's instructions, contributes to the achievement of the cooperation sought by the Congress. Fundamental fairness would require that one charged with and penalized for violation be shown to have caused, or at least to have knowingly acquiesced in, that violation. Under our legal system, to date at least, no man is held accountable, or subject to fine, for the totally independent act of another. . . .
>
> Not requiring the Secretary of Labor to establish that an employer knew or should have known of the existence of an employee violation would in effect make the employer strictly and absolutely liable for *all* violations and would render meaningless the statutory requirement for employee compliance . . . [emphasis by the Court].

In addition to this sensible pronouncement by the Court, it should not be forgotten that the Act itself, in defining a serious violation, specifically excludes situations where "the employer did not, and could not with the exercise of reasonable diligence, know of the presence of the violation."

OSHA lawyers have been trying to get around this rather clear rule of law by invoking the common law doctrine of *respondeat superior* and by imputing to the employer each unsafe act of an employee. With the September 26, 1977 decision in *Mercer Well Service, Inc.*, the Review Commission has accepted that argument. In so doing, they have done no favors either for OSHA or for the employees for whose protection this law was enacted.

Admittedly, the Act places primary responsibility for job safety and health on employers. But how can employers carry out this responsibility if they don't know about employee infractions? Should a parent be punished if his child jay-walks on the way to school or doesn't pay attention in class? The answer today is "no." But suppose for a minute that Congress were to expand OSHA's responsibilities to cover public school safety, and parents were then fined for the infractions of their children. Do you think for one moment that this fact would make the children more careful on their way to and from school, or that fining parents would reduce accidents to school children? If any sensible person thought the answer was "yes" to that question, then surely Congress would have long ago enacted—or at least considered—such legislation.

The *Mercer* case says that the fact that an employee neglected his safety belt shows that his employer's safety program was deficient. This is no different from saying that a school child's jay-walking shows that his parents safety training program is lacking.

I submit, however, that there is just no conceivable way under the sun to devise a safety program which will prevent accidents caused solely by the neglect or error of an employee, even a supervisory employee. If there was, you can be sure that it would have been enacted years ago as a compulsory requirement for every person in this country. Thousands upon thousands of people are killed each year—at work, at home, and on the highway—because of human error. If either OSHA or the Review Commission knows of a safety training program that will cure human error, then I think they ought to come forward and specify it so that this appalling accident toll can be eliminated. If they can't so specify, then I think they ought to stop citing and convicting employers for not doing something that OSHA itself does not know how to do.

In my view, the *Mercer* case represents a giant leap backward in effective job

safety. It reverses what has been nearly six years of sensible development of this law. During the Act's early developmental stages, the Review Commission began to be cognizant of the Congressional intent not to make employers absolute guarantors that their employees would always observe OSHA regulations. Thus, in *Secretary v. Standard Glass Company, Inc.,* 1 OSAHRC 594, 596 (1972), it was stated that: "[a]n isolated brief violation of a standard by an employee which is unknown to the employer and is contrary to both the employer's instructions and a company work rule which . . . has uniformly [been] enforced does not necessarily constitute a violation . . . of the Act . . .." It is evident that even at this early stage employer "knowledge" was recognized as an important aspect in an "isolated incident" type of situation.

Later on, even greater emphasis was directed at the establishment of employer knowledge as an essential element of proof. In *Secretary v. Arnold Hansen, d/b/a Hansen Brothers Logging,* 1 OSAHRC 869, 872 (1972), the Commission vacated a citation in an employee death case, because there was no evidence that "respondent's owner knew or reasonably should have known that the deceased employee would disobey . . . instructions." Subsequent cases further emphasized this knowledge requirement. See, for example, *Secretary v. Mountain States Telephone & Telegraph Company,* 2 OSAHRC 168, 170-171 (1973) which only last year was cited with approval by the 6th U.S. Circuit Court of Appeals in *Dunlop v. Rockwell International,* 540 F. 2d 1283 (6th Cir. 1976).

Some Review Commission cases speak of exculpating the employer if what is alleged to be a violation is the result of an "isolated incident" while others speak of the requirement that there must be evidence of "employer knowledge" that an offense has been committed as charged. Nevertheless, knowledge of the existence of a violation, either actual or constructive, is an essential element of any violation of the Act, and OSHA has the burden of establishing that the respondent knew or reasonably could be presumed to know of the existence of the condition or practice upon which the violation is based.

The Review Commission has turned this principle on its head by treating certain fact situations as "isolated incidents," then holding that the employer has the burden of establishing that the occurrence was isolated. *Secretary v. Murphy Pacific Marine Salvage Company,* 15 OSAHRC 1 (1975) is just one of many recent cases where this upside-down logic has been applied.

What the Commission has done is to place two different labels on what is, in reality, just one legal question. As a result, they have arrived, once again, at two inconsistent positions. This inconsistency should be resolved by holding that in all cases OSHA must establish that the employer had actual or constructive knowledge of the alleged violation. This is the position that has been adopted by the appellate courts. As the U.S. Court of Appeals for the District of Columbia Circuit said in the *National Realty* case: ". . . the secretary must be constrained to specify the particular steps a cited employer should have taken to avoid citation, and to demonstrate the feasibility and likely utility of those measures." The emphasis on the secretary's burden of establishing employer knowledge was also taken by the Ninth Circuit in the *Alsea Lumber* case from which I quoted earlier.

In passing the Occupational Safety and Health Act, Congress was not legislating in the area of tort law, but was seeking "to assure so far as possible every working man and woman in the nation safe and healthful working conditions," and the Act is addressed to conditions, not isolated episodes of negligence. In *National Realty,* Judge Skelly Wright cautioned against the overemphasis on a single incident, observing that "actual occurrence of hazardous conduct is not, by itself, sufficient evidence of a violation, even when the conduct has led to injury." Recognizing the novel and sweeping objectives of the Act, he stated: "[I]t differs from traditional workmen's compensation laws in that it penalizes maintenance of unsafe conditions rather than merely imposing tort liability for actual injuries suffered by employees."

Disavowal of the tort concept is also found in *Getty Oil Company v. OSAHRC,* 530 F. 2d 1143, 1145 (5th Cir. 1976): "The section is intended neither to impose liability on the employer for an employee's negligence on a *respondeat superior* basis, nor to create a standard of absolute liability."

In *Horne Plumbing & Heating Co. V. OSAHRC,* 528 F. 2d 564 (1976), the Fifth Circuit declined to accept OSHA's contention that liability could be based upon the imputation of a foreman's knowledge and conduct to his employer, stating: "[I]t was error to find Horne liable on an imputation theory for the unforeseeable, implausible, and therefore unpreventable acts of his employees. A contrary holding would not further the policies of the Act and it would result in the imposition of a standard virtually indistinguishable from one of strict or absolute liability, which Congress, through section 17 (k) *specifically eschewed.*"

It may well be reasonable to impute to his employer a foreman's knowledge of a condition which was static in nature. But the imputation of knowledge of such a condition is quite distinguishable from the imposition of liability for a foreman's isolated act, such as overlooking the fact that a subordinate employee was not wearing a safety belt or hard hat. It is also worth noting that when an OSHA violation is established the employer is obligated to abate the violative condition. I submit that the mind of man has not yet devised any abatement procedure for somebody else's errors or neglect.

Perhaps from this discussion you have noted a disposition of the courts to refuse OSHA attempts to penalize employers for the unsafe acts of their employees, and a contrary disposition on the part of OSHA and the Review Commission. If so, you are correct. You may also be puzzled by this if—like most people—you think that the courts must be obeyed. It's true that those who are parties in specific cases are bound by the rulings of the courts in those specific cases. However, no matter how sound the principles set down by a court may be, there is no legal requirement that lesser authorities like OSHA and the Review Commission must follow such principles in other cases. Simple logic would dictate that they do so, but that appears to be an attribute somewhat foreign to the administration and enforcement of OSHA.

As a result, unless your company is prepared to go to the Courts of Appeal you are now subject to penalty for the errors and neglect of your employees when safety infractions result from their activities, whether or not you know about them, and whether or not you can prevent them. If you will give some thought to what this means for the law, for the country, and for your own companies, perhaps you will see what I meant when I suggested that the bell tolled for thee when the *Mercer* case was decided last month.

GETTING WIRED IN ON EYE SAFETY

By JAMES E. O'NEIL
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During some research recently on the principal causes of blindness, I noted that an international survey to determine what ailment or affliction mankind feared the most, showed cancer barely nosing out blindness for first place. Why then, if the fear of losing one's sight is that great, is American industry still racking up annually over 100,000 eye cases serious enough to merit workmen's compensation awards? This flood tide of ocular damage moves on as relentlessly as the mighty Mississippi.

Is it for lack of eye safety program precedent or experience? It can't be. Eye safety success stories for entire plants, even corporations, have been documented and publicized for over a half-century. Perhaps the philosopher was right who observed that "the only thing we seem to learn from history is that we never learn anything from history."

Are eye safety failures due to poor quality safety eyewear? They can't be. The American industrial workforce and their offspring and other children using school labs and shops have ready access to the best eye and face protective devices in the world.

Does worker eye damage continue for lack of state and federal safety requirements? Not really. OSHA rules and regulations on eye safety may be brief, but, to me at least, their intent is crystal clear. Why American management, with help from labor unions, which I grant occurs all too seldom, doesn't slam the door once and for all on ocular damage in industrial workplaces remains an intriguing mystery.

If we look back in time to the year 1916 we find that the steel industry, plagued by ocular injuries and lost eyes, had immediate and complete success with the first ever gate-to-gate eye safety programs. Sixty-one years later we observe the mass of American industry still playing "industrial roulette"—with someone else's chips, that is. The price for this folly, setting aside the long-range social and economic impact on injured workers and their families, should make every cost-conscious firm take immediate corrective action.

Believe me, it's not a "pie in the sky" idea to maximize eye safety coverage or to determine whether employees can see well enough to earn the high wages management complains about paying them. After all, if eyesight isn't an important factor in producing profitable products and services, then every blind American who wants to work could be holding down an industrial job. Since, obviously, that isn't practical, then it would seem to follow that optimum vision screening and optimum eye safety are prime prerequisites for not only increasing profits, cutting insurance and workmen's "comp" costs, but also for keeping a high gloss on the corporate image. (A factor that utilities should be especially concerned about.)

The Snellen wall chart still used by a majority of firms to test eyesight belongs in the Smithsonian Institute. Even properly used, which occurs all too seldom, it only helps an employer determine how well an employee or prospective worker can see at a distance of 20 feet. In modern industry the tasks requiring good vision at 20 feet or more are few and far between and getting more scarce all the time. Granted, the Snellen chart has application with children and much of the general public, but for industrial usage,

forget it.

Well then, how should industry check eyesight and re-check it periodically, perhaps at 18-month invervals, or sooner, if job seeing requirements change? With scientifically designed binocular vision screening instruments which in about five minutes provide a check of not just one but 14 visual functions important to efficient and profitable operation. Such screeners, available for purchase and sometimes lease, utilize the results of about one-half million vision tests made in an extensive research effort many years ago at Purdue University.

Do you have to mortgage the plant to buy such a screener? Not at all. Any of the four or five validated machines cost less than a small drill press, or a good table saw. Keep in mind that these screeners are not mechanical eye doctors; they simply tell you which workers need more detailed professional examination. And when you refer a worker out for a more thorough evaluation, be sure to inform the examiner about the vision requirements of his particular job. Otherwise the odds favor his getting glasses—if he needs them—for looking at television or reading his newspaper at home, conveniences your company shouldn't pay for. Unless, of course, it elects to provide for such fringe benefits.

To help you through the vision-screening phase of sight conservation, the National Society for the Prevention of Blindness makes available a guide entitled "Eyes in Industry." Send for a copy of this brochure, written for the layman, and I'll see that you get it free. I should also mention that with a minimum of instruction anyone can use a binocular vision screener and get good, consistent, and worthwhile results.

The least recognized advantage of intelligently applied vision screening procedures is that it divides a workforce into two clearly defined groups: those who need visual assistance from corrective lenses, and those whose eyesight is right for their jobs. The employees who need and regularly use corrective safety glasses will no longer represent a threat to eye safety discipline. Which leaves you free to ride herd on just those who should use some form of plano (non-corrective) safety eyewear all during their time on plant property.

With vision screening taken care of, we can move on to where the biggest profit-making possibilities are: in eye safety. No other aspect of accident prevention embodies an equal opportunity to spend so little to reap such huge rewards, not only in eyes saved but, literally, in thousands upon thousands of dollars.

Having worked in Wisconsin recently, the compensation figures there for eye damage are fresh in my mind; I'll leave it to you to substitute your state's award schedule for ocular injury and loss of sight. For example, loss of sight in one eye (not surgically removed) in Wisconsin is worth $14,250, which is about what 1,780 pairs of safety glasses would cost, at an average price of $8.00. And keep in mind that I haven't mentioned the added costs for medical and facial disfigurement awards, or the long-range impact on the worker, even the community, if he no longer is able to function normally due to sub-standard vision, or psychological problems resulting from trauma. Which happens more often than most of us realize.

The same logic holds when a Wisconsin worker loses both eyes and is awarded $57,000—or $62,700, should surgical enucleation be required. For such escalated dollar amounts it's possible to buy over 7,000 or 7,800 pair, respectively, of (ANSI Z87 quality, of course) safety specs, again using an average cost of $8.00 per unit. Naturally, the more eyes protected, the greater the profit potential.

If you tell me your firm has decided to protect the eyes of, let's say, 50 per cent of its workforce, I'll guarantee you on my agency's letterhead, whether you employ 100 or 100,000, that such a guesswork program will surely fail. Experience and two major factors which bear on all eye safety programs make me confident about my stand: (1) the law of averages and, most important of all, (2) the constant threat of co-worker-caused eye damage. Sooner or later one factor—or more likely, both—will do you and some hapless workers in. There's just no way to beat the system.

Approximately 30 to 35 per cent of all industrial eye injuries result from flying objects, molten metal, or corrosive liquids striking one employee's eyes from another worker's job or from parts unknown. All of which, I believe, emphasizes the importance of side shields on safety glasses. It was a sorry day when side shields lost out to fashion.

If employees are interested only in looks, let them chase that cosmetic rainbow on their own time. At work, however, maximum eye protection is the name of the game. And before it slips my mind let me mention that if you assure me your company has instituted gate-to-gate eye safety with proper eye protection required for everyone who works in or visits shop areas and firm (3 or 4 step) rules leading, if necessary, to discharge for the rare individual who insists on leaving his eyes unprotected, I'll write a guarantee on NSPB stationery that you and your company will indeed succeed. And the first or second eye saved usually pays the entire cost of the average 100 per cent eye safety effort. After that, it's all profit.

Let me summarize briefly, and as a final comment give you some information that I feel is of such importance that, in my view, at least, it should be posted prominently in plain view of every safety director and every top management official across the country. And it wouldn't hurt for labor officials—elected, I'm told, to protect workers' interests—to also give it equal consideration.

But first, here are the facts which will help you and your employer increase company profits, while cutting down on sleepless nights, unnecessary and preventable costs, and needless injury to workers:

1. Mankind fears blindness nearly as much as it does cancer, and with good reason. What more devastating thing could happen than to be plunged needlessly into never-ending darkness? Imagine feeling or being responsible for inflicting such a nightmare on another human being!

2. The Snellen wall chart is the dodo bird of American industry. Swap it in for a binocular vision screening instrument which allows checking 14 visual functions for all categories of labor in a matter of minutes. Find even one quality-control inspector, one tool and die maker, or others with eyesight needing correction, and your company has its investment back. After that everyone is ahead of the game.

3. American workmen and technical students have available better quality safety eyewear than is found in any other country. And improved and new devices are moving into the supply pipeline faster than ever before, thanks to accelerated research and development.

4. Gate-to-gate eye safety for an entire company workforce came into being in the steel industry in 1916, and any firm that's tried it since has had equally good results.

5. There's big money to be made by doing what common sense and substantial facts dictate, and what OSHA really requires anyway, through preventing eye injuries, loss of sight, and total blindness among all employees, rather than to play guessing games. Keep in mind that about one-third of American workers suffering eye damage are hurt as the result of the actions of co-workers; this fact alone should rule out guesswork eye protection. Also, remember, eye safety success calls for understandable and fair discipline. Hard and fast rules are a must.

6. The largest and still growing monument of proof that safety eyewear will do a job if it is used conscientiously is found in the membership of the Wise Owl Club. To date, 63,100 Wise Owl memberships have been awarded; about 25 per cent of these industrial workmen saved not just one but both eyes, bringing our Club "total eyes saved" statistic to 78,875. You

don't get results like that with luck or by protecting the eyesight of just part of a workforce. The "comp" savings for 78,875 eyes is over $315 million.

And now for that final, special information I promised: You all calculate and promote ways to reduce costs through expanded accident prevention and improved health measures. But in looking for the big effect you may well be underestimating something that on the surface seems to deserve little, if any, attention. I refer to the so-called minor accident, one which costs, let's say, "only a hundred dollars."

Consider what various kinds of firms have to do free simply to make up for one minor eye injury or other kind of minor injury costing "only" $100:*

1. Electronics factory must build 15 color television sets.
2. Builder must construct 298 sq. feet of warehouse space.
3. Paint manufacturer must produce 893 gallons of paint.
4. Telephone company must handle 9,091 local pay phone calls.
5. Publisher must sell 18,518 newspapers.
6. Toiletries firm must make 29,412 bars of soap.
7. Meat packer must process 30,303 lbs. of hamburger.
8. Bakery must bake 36,364 loaves of bread.
9. An auto manufacturer must build two-thirds of a popular, low-priced sedan (which I'm afraid I may have bought).

*Journal of American Insurance.

78 2213

THE HIDDEN RELATIONSHIP BETWEEN EMPLOYEE AND PUBLIC SAFETY

By ALEX PIERSON
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GAS, Ltd. is an industry-owned insurance company. It was formed because the gas industry had been faced with a long history of uncertain markets and rising costs in the purchasing of liability insurance. The larger companies were faced with rising costs, higher deductibles, more restrictive coverages, and limited capacity during a period when the overall industry loss ratio was only 27 per cent. GAS Ltd. was formed by the industry to solve these problems. The newly formed company is operated by a board of directors. Each member of the board is an executive of a gas or combination company.

Ebasco Services, Inc., since 1935, has furnished engineering, construction, and consulting services for the utility industry, government, and business both here and abroad. The company employs approximately 4,000 people, most of whom are professionals who perform services from project planning and contract management to specific studies and reports.

Ebasco Risk Management Consultants, Inc. is a subsidiary of Ebasco Services. The function of the subsidiary is to help organizations achieve and maintain the most effective and efficient risk management program at the most economical cost. It is in this area, risk management, that loss control functions.

The relationship between the two companies is that Ebasco Risk Management Consultants, Inc. has a contract to manage the industry mutual insurance company GAS, Ltd. under the direction of GAS, Ltd.'s board and with the help of the board committees.

It may appear from the brief background I have presented that the formation of GAS, Ltd. occurred overnight—it didn't. The venture was under study by the industry for some five years, during which time it was subject to review by two of the country's largest management consulting firms, two very reputable law firms, and a committee of officers from operating gas companies.

GAS, Ltd. started its operations on March 1, 1975, and to date has 103 companies participating in the industry mutual. These companies vary in size and sell natural gas as well as some LP, or in combination with electric they also sell steam or water. Employee complement of these companies ranges from six employees to more than 10,000 employees. The areas served vary from communities with a population of 3,000 people to multi-state operations serving millions of people. The operations of the utilities include exploration, drilling and well operations, gathering systems, extraction, transmission, distribution, natural gas storage, SNG plants, LNG plants, LPG storage, retail sales, fleet operations, and also include in a number of combination companies electric, water, and sewage operations. A closer look at these operations has given me a much deeper admiration for the utility industry's enviable achievements in loss control and accident prevention. However, much more work in preventing losses needs to be done. I venture that not one of us will live to see the day when we can say the loss control job is done. It's not that kind of a job. New challenges lie around every corner. If the job were easy, it would have been accomplished long ago.

Since this is a gas session, I have tried to lean my remarks toward the gas in-

dustry when appropriate. Information gathered from visits to insured companies, from member company claim reports submitted to GAS, Ltd., from AGA-sponsored research project reports, and from an independent study of gas pipeline distribution systems for the Department of Transportation provides the types and occurrence frequency of accidents involving the public. Additionally, the information shows the cause of accidents. A study of claim reports received by GAS, Ltd. prepared to show who had control or who could have prevented the accident from happening reveals some interesting information. In a control classification study by Ebasco, we analyzed the accidents received and determined whether the gas company, the customer, contractor, or a member of the public could have controlled circumstances to have prevented the accident. The data include accidents of all types that affect utility liability exposures, and are not limited to physical plant. Examples in each of the classifications are as follows. It was determined that the utility had control of employee activities or work areas where members of the public fell into or tripped over excavated work sites. This also includes motor vehicles driven into excavations where drivers alleged insufficient work area warning and protection. It includes members of the public who fell on stairs or on same-level on company premises, and those customers where employees working on utility facilities caused the accident to occur resulting in injury to members of the public or property damage.

With regard to the customers, examples are improper lighting of gas appliances, disregarding "red-tagged" equipment and turning on defective appliances, flues pulled from chimney, insufficient combustion air, and contact with energized electric lines.

For contractors, the most frequent cause, as we all know, is construction equipment contact with underground facilities, or contact by construction equipment with energized electric lines, improper lighting of newly installed large industrial equipment, barges and tugboats striking underwater gas lines or ripping up pier facilities. Additionally, a large number of contractor accidents occurred on the utility property.

The public accidents include the vehicle driver who strikes a utility facility such as a pole, guide line, or the serviceman who is attacked and beaten or killed, and fires caused by children playing with matches, fireworks, or cases involving suspected arson.

The reports we received and studied showed three additional classifications which do not lend themselves to the presentation. Briefly, they are miscellaneous, which includes complaints, trespassing, slander, etc. Not classified are the discontinued service for nonpayment and the precautionary type, where they appear to have potential for claim payment and were deleted since it was later established the utility was not involved. The latter were gas leaks. These are maintained in a separate classification for the purpose of this study since cause classification was difficult to determine, i.e., gas leaks were reported where sewer or water lines leaked causing cavities in the earth; others involved manhole explosions where the type of combustible has not been determined; and several accidents were reported as alleged gas leaks. The interesting note about gas leaks, those that were reported to have been on the utility facilities, is that only five per cent of the total reports fell into the gas leak classification.

Representatives of the insureds were requested to submit claim reports to GAS, Ltd. estimated by them to have a claim potential in excess of their deductible, regardless of liability exposure. During the approximate two and one-half years since GAS, Ltd. started operations, 34 of the 103 companies reported 288 incidents. Many of the reports received were precautionary or the "record only" type. However, each report was treated as a real potential and reviewed by the company's claims attorney for action deemed necessary to protect the interest of the insured. Although the number of reports were limited because of the short time the company has been in operation, and the accident experience trends may change in time, the current findings focus on a major problem that affects utility safety programs and the administration of these safety programs. Of the 288 incidents reported to GAS, Ltd., 83 per cent were classified in four control classifications, that is, the utility, the customer, the contractor, or member of the public was in control of the activity, such as walking, driving vehicles or construction equipment performing physical work on utility facilities, lighting home appliances, ignoring hazardous conditions, etc., prior to the accident. The study showed that the utility had control of 31 per cent, or the largest number of accidents that occurred in the four classifications. Second, with 26 per cent, were members of the public; third were customers, with 24 per cent, and last were contractors with 19 per cent. The most severe and costly accidents were reported by those of utility and contractor controlled classifications. The utility has or should have control over some of the accidents classified for contractors. Contractor accidents that occur on utility property and, to a limited degree, those that occur as a result of utility facility damage on pipeline systems are examples. One-half of the reported accidents occurred under control classifications of the utility and contractor.

When reviewing contractor activity, another of the four major control classifications, the information suggests liability accident reduction is possible by the application of appropriate preventive measures in the utility "in-house" loss control and accident prevention program.

Analysis of accident data in the AGA and Department of Transportation studies includes reportable incidents as defined in the Code of Federal Regulations, Title 49, Part 191.5, as follows: (1) caused a death or personal injury requiring hospitalization; (2) required the taking of any segment of transmission pipeline out of service; (3) resulted in gas ignition; (4) caused an estimated damage to the property of the operator or others or both of a total of $5,000 or more; (5) in the judgment of the operator, significant even though it did not meet the criteria above; (6) required immediate repair and other emergency action to protect the public, such as evacuating of a building, blocking off an area, or rerouting of traffic.

An analysis of accident data in the studies of pipeline systems shows consistent practices in the gas industry provide assessment of safety and the measures being promoted or in use to increase safety. Information of industry experience in these studies shows that outside forces are the largest problem of gas utilities as the cause for reportable leak incidents. While they are attributed to many causes, including landslides, washouts, and earth movement, by far the major outside-force cause is pipeline damage due to excavating equipment. Some of the reasons damage occurred to pipelines are (1) equipment operator negligence, misjudgment, or carelessness; (2) inadequate physical markers to accurately locate or alert equipment operators to the presence of a pipeline; (3) company pipeline patrol was not effective in detecting earth-moving jobs (this is somewhat correlated to frequency of patrol, which tends to indicate that lines with more frequent patrols have fewer digging incidents); (4) lack of communication between company and excavators as to the importance of notification of intent to dig.

Recent attempts by utilities and/or governmental agencies to reduce outside force damage have been by (1) establishing good means of communication between utilities and excavators; (2) establishing laws which provide penalties for improper excavation; and (3) studies of outside forces. The report for the DOT

regarding this matter suggests, "It appears that more emphasis should be placed on underground facility locations, one-call systems, and education of excavator, and less emphasis on statutes."

The cause of outside-force incidents, the DOT study continues, can be divided into two broad classes: (1) earth movement and (2) human related causes. The human related causes occur when construction equipment is operated by an outside party, vehicles which strike the facilities, and equipment which is operated by employees or company-retained contractors.

Human factors are involved in an all outside-force incidents with the exception of weather and earth movement, a maximum of 18 per cent of the incidents reported. Human errors, it is suspected, are matters of poor judgment or not realizing the location of a pipeline.

The five-year AGA study showed that in 1,038 outside-force accident reports, some type of marking device existed or was furnished by the utiliity. For instance, 260 accidents occurred when there was an on-site observer, and 66 accidents occurred when the line was marked by an excavation.

The claims report study of GAS, Ltd. shows that the majority of incidents occurred when the employee was in control of activities prior to the incident. The AGA study and the study prepared for the Department of Transportation conclude that the major cause of accidents were outside-force classification, and the cause of a majority of these accidents were suspected as human failure. These reports suggest that perhaps a solution lies in better education of the observers, communication among interested parties, and more care such as hand digging by contractors. The analysis of GAS, Ltd. experience shows that the majority of accidents were in the classification which reflects on the utility loss prevention program, the work procedures, and their enforcement.

One of the predominant cures which all this information suggestions for prevention of public liability accidents, specifically those that are reported most frequently, appears to parallel the in-house loss control program concept. That is, to educate, train and instruct employees of the potential for liability claims resulting from their work activities, as you do or should be doing in the employee safety program to prevent employee accidents. The studies show that most of the accidents occurred under the control of the utility; they also show that an employee was directly involved with work activity, or supervised the work activity, or was charged to oversee others to protect the utility facilities from damage, and that human error was the predominant cause of the accident.

In aerospace systems there has been expensive research done in the study of human error analysis and human reliability. The results indicate 50 to 70 per cent of the failures of major aerospace systems are due to human errors. The five most predominant types were classified as follows: (1) failure to follow procedures—40 per cent of the time; (2) incorrect diagnosis of particular situation—20 per cent; (3) misinterpretation of communication, both written and verbal—10 per cent; (4) inadequate tools, equipment, or environment—10 per cent; and (5) insufficient attention or caution—20 per cent.

The first type, "failure to follow procedures," is often caused by poorly written procedures (procedures that are incorrect). The second type, "incorrect diagnosis of particular situation," is usually caused by poor engineering design. The third type, "misinterpretation of communications," is generally the result of the "I didn't listen" syndrome. Poorly written communications can also result in misinterpretation, hence mistakes. The fourth type, "inadequate tools, equipment, or physical environment," often contribute to human error. The fifth type is insufficient attention or caution. These pure goofs account for approximately 20 per cent of the human errors made. This figure has been established repeatedly, no matter what type of industry or job being done.

Accident cause resulting in public accidents occur more often by people inactivity than pipe system component failure. Approximately half of the accidents reported to GAS, Ltd., and a major portion of those of the DOT study on outside forces, show that the people activity is performed by employees. The prevention methods are no different from those currently applied in your employee safety programs. Employees and management must be reminded of this fact and must be informed on how to avoid these pitfalls.

Recently, Kay Bailey, acting chairman of the National Transportation Safety Board, spoke to the Utility Location and Coordination Council of the American Public Works Association. She said, "The independent contractor, in many cases, has been labeled the culprit; but it appears by close examination of many damage reports that the operator of the underground system and their own contractors are the ones who are causing most of the damage." She continues, "I think you should look within your own operations. In this vein, I am aware of one combination gas and electric company that, in reviewing its damage statistics, discovered that the No. 1 culprit damaging its gas lines was its own electric department. They never talk to each other!" Kay Bailey concludes: "This is surely one area where I think you can make tremendous strides."

In concluding, this information suggests many of the accidents which result in liability claims are under control of the utility. Reducing the frequency of accidents involving members of the public is no different from the techniques you currently use in preventing employee accidents and property damage. Management and employees must be made aware of your company experience, causes, and preventive measures of public accidents as they are aware of employee accidents. Better education of observers, improved communications among interested parties, review and update of work procedures, and enforcement of the program designed to prevent public accidents have been suggested by the studies. The remedy for reducing public accidents is the same, therefore, as you currently use in preventing employee accidents. Your track record shows you have the know-how in directing successful employee accident prevention programs. With this expertise, it is now necessary to apply your proven knowledge to public safety.

INTEREST-MAINTAINING ACTIVITIES

By HARRY W. BECKER, C.S.P.
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I would like to discuss various interest-maintaining activities which will be helpful to you in creating and maintaining a proper attitude toward safety by employees and motivating them to work safely. The programs developed by the AWWA accident prevention committee were designed for the most part to be used by the utilities and AWWA sections to accomplish this objective. However, let us first review the water utility safety record to emphasize the need for an accelerated accident prevention effort as well as pinpoint our target problems.

Although the disabling injury frequency rate for the water industry in 1976 indicated a 2.4 per cent improvement over that of 1975, our safety record still leaves much to be desired, and is between three and four times higher than the gas and electric utilities. The disabling injury frequency rate for theU.S. water utility industry in 1976 was 32.6, whereas gas was 11.17 and electric was 8.51. It is interesting to note that these industries at one time had safety records comparable to our own. The gas industry, for example, in 1947 was in almost the same position in the safety area as we are today. One of the main reasons for our present standing is that, with some exceptions, the water utility industry for many years was not safety conscious. Manufacturing companies and investor-owned utilities began to organize programs 50 years ago, whereas we did not establish an AWWA accident prevention committee until the early 1950s, and it is only since 1969 that we embarked on a comprehensive expansion of our safety programs and encourage the utilities and AWWA sections to incorporate them in their respective safety activities.

Another fact worthy of note is that water utility employees are injured by much the same kind of accidents that incapacitate workers in other utilities and industries. Although our problem may be complicated by the fact that a majority of the water utilities are municipally operated and have fewer than 50 employees, thus making it necessary for the manager or superintendent of a small utility to personally organize and supervise the safety program, it can be solved if management adopts the attitude of putting "safety first" and not last. We must motivate the employees to work safely, not only by surrounding them with a safe environment, but by setting the example and not just giving "lip service" to the activity. Too often many of us are prone to treat safety as we do religion—we are all for it, but we fail to practice it.

The programs the AWWA accident prevention committee has developed for our industry parallel the programs used by other industries and have proved to be successful in preventing accidents. AWWA has received awards from the National Safety Council and the Colorado Safety Association in recognition of the excellence of its programs. Water utilities and sections that have used them extensively have shown a downward trend in their accident frequency rates in the majority of cases, so it can be done, and our major problem is therefore one of increasing the exposure of water utility personnel to the programs available.

Presently, the AWWA accident prevention programs include:

1. Collecting, analyzing, and publicizing water utility safety data for both employee accidents and motor vehicle accidents, on an annual basis. The purpose of this activity is to determine target problems by analyzing the types of accidents and produce materials which con-

centrate on the reduction or elimination of the common types. The data collected is also used to report our industry-wide figures to such organizations as the National Safety Council, so that we can compare our records with other industries, and finally for the purpose of selecting winners for safety awards.

2. The supervisor's safety seminar. This program was implemented several years ago, and to date we have conducted approximately 80 seminars throughout the United States and Canada under the sponsorship of AWWA sections or individual utilities. Over 2,000 supervisors have attended the seminars, which are immensely beneficial to all levels of supervision. The objective is to familiarize supervisors with the technique and philosophy of accident prevention, as statistics reveal that it is the informed supervisor who invariably has the better accident experience. This program is a good example of the kind of beneficial communication which results when "If Mohammed will not come to the mountain," then the mountain must go to Mohammed. It provides another opportunity for getting the association and its services out to the utilities which, no doubt, in many instances are members but have never had any direct contact or tangible evidence of what AWWA can do for them. The more supervisory personnel in our industry that we can expose to this type of program, the greater will be our chances of continuing to reduce accidents, and we are constantly seeking ways and means of increasing this exposure. The AWWA accident prevention committee is now in the process of preparing a list of men who have a high degree of expertise in the safety field and are thoroughly familiar with the safety seminar, in addition to being geographically located in various parts of the United States. Thus, we can arrange to have them schedule and conduct the seminar from time to time in the various regions and eliminate the necessity of my personally having to be in attendance. We plan to purchase additional sets of the seminar films, slides, demonstration materials, handouts, etc., to give us more flexibility and hopefully enable us to increase the number of seminars conducted in a calendar year. The committee is expanding the seminar to a two-day course by adding new subjects which will be of value to supervisors in their accident prevention activities. One of these, for example, deals with the subject of motor vehicle accident prevention, which is not covered in the present one-day seminar due to time limitations.

3. Safety audit program. This program has proven to be particularly successful in improving the accident records of those utilities audited, and each year we contact the larger utilities with poor records, urging them to avail themselves of the service. Essentially, the program consists of my spending two-and-a-half to four days visiting the utility and making a comprehensive study of its operations, equipment, and facilities, using the seven basic elements which constitute a sound safety program as a checklist. At the conclusion of our visit, we meet with top managemen' and present them with a confidential report of our findings, pointing out areas in the program which need "beefing up."

4. Our tailgate talks program has been in effect for several years and is being used by many utilities as part of their overall accident prevention activities. We have received many favorable comments from utilities using the talks, indicating that they have proven to be an effective part of the overall safety program. We produce 52 of these five-minute safety talks each year on a variety of subjects, and they are published semi-annually. Each issue contains 26 talks so that a different talk can be used each week.

5. Our safety poster program was designed as another means of creating and maintaining interest in safety, and during the summer of each year we select 12 posters from the National Safety Council catalog which deal with the most common types of accidents occurring in our industry, and after being imprinted with the AWWA logo, they are sold in sets of 12 to both members and nonmembers. By purchasing large quantities of the posters from the NSC, we are able to pass on the savings to our members.

6. Safety award program. This program has been in existence for many years and has been revised from time to time to keep the criteria in line with those of other organizations, such as the National Safety Council. The objective of the award program is to give recognition to those utilities having good safety records and lend a spirit of competition to encourage those with poor records to make a greater effort to reduce accidents.

7. Our safety film library is constantly being expanded so that utilities and others connected with the water supply industry can borrow a variety of audio-visual aids dealing with safety and use them in safety meetings, section meetings, etc. Since AWWA implemented the multi-media reference service over a year ago, there has been an ever-increasing interest in this program, and most of the films and slides are usually reserved 90 days in advance. The films and slides are available on a free loan basis and are reserved for a two-week period. We recently added three items to the library, a set of slides on defensive driving a 16mm film on the subject of lifting entitled, "Bend Your Knees."

8. The M-3 manual entitled, "Safety Practice for Water Utilities" was revised earlier this year to eliminate any conflicts with OSHA regulations and serves as an excellent guide and reference not only for setting up a formal safety program, but it provides valuable information for carrying on a continuing program. The manual covers in detail each operation normally found in a water utility, points out the hazards, and gives suggestions for the elimination or reduction of the hazards. It has been found to be of great value to utilities when preparing a safety rule book or safety manual covering their operations.

9. The Handbook of Occupational Health and Safety Standards for Water Utilities was developed a few years ago to provide the water industry with a ready reference regarding the OSHA regulations. Essentially, what we did in developing the handbook was to take the many standards adopted by OSHA and weed out those which normally would involve our operations. The wording of the regulations was simplified in an effort to make them easily understandable. Although many water utilities are not as yet covered by OSHA since they are municipally-owned and the states in which they are located are not operating under their own approved OSHA plan, it is only a matter of time before all utilities will be required to abide by the OSHA regulations, and it would be well to become familiar with them and take the necessary action to be in compliance.

10. This year the AWWA accident prevention committee embarked on a new program in the area of motor vehicle accident prevention. We collected motor vehicle accident statistics from the utilities who report their employee accident data to us each year, and the data has been run through the computer, not only for the purpose of developing a motor vehicle accident frequency rate but also to provide information as to the types of accidents. This information has enabled us to pinpoint the target problems and serve as a guide for us when developing materials and programs for use by the utilities in reducing motor vehicle accidents. Incidentally, an analysis of the accidents reported for 1976 indicates that almost 50 per cent of them were the result of backing, striking a fixed object, or striking the vehicle ahead. Practically all of these would therefore be classed as chargeable to our driver.

11. We recently arranged for AWWA members to purchase first aid kits at a reduced cost for placement in the utility trucks and other vehicles as well as in the buildings housing their facilities, as a means of standardizing such equipment and insuring that they are in compliance with OSHA regulations.

In conclusion, to quote Sir Francis

Bacon, "Ideas are like manure, they are of little use unless they are spread." And the same is true for safety. Unless the sections and utilities make extensive use of the programs we just outlined, we will not reach our goal of making a substantial improvement in the water utility safety record. As soon as the majority of water utility managements accept "YCSSSOYA" as their slogan, the sooner we can accomplish the goal of having an accident record we can be proud of. In the event you are not familiar with the slogan, it is one adopted by safety engineers many years ago and simply means, "You can't sell safety sitting on your fanny!"

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MOTIVATING EMPLOYEES TO WORK SAFELY

By G. STEPHEN LYONS
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Although within my own company, I am not directly responsible for coordinating and directing the safety program, I am serving in a volunteer capacity as the safety chairman for the AWWA, Indiana section, and as such it is my job to assist the AWWA accident prevention committee in the implementation and use of the various AWWA programs by the utilities in the section.

It is an acknowledged fact that in all industry at least 85 per cent of the accidents are caused by an unsafe practice or an unsafe act, and not by an unsafe condition. Thus, if we are to materially improve our safety record, we cannot neglect our major problem, which is primarily one of education and training, or in other words, creating and maintaining a proper attitude toward safety by all employees from top management down to the man using the shovel or other tools and equipment. To accomplish this, management must assume full responsibility for safety, just as it carries full responsibility for all other phases of a utility's operation. The costs for a poor safety record reflect upon the earnings just as surely as do the costs for inefficient production distribution, sales or accounting practices, or procedures. Management may delegate, as it must, to different people the actual execution of company policies and responsibility with respect to safety and to these other company operating activities. However, at the outset, let me say that in the area of safety, management must do more than delegate responsibility—it must be an active partner, if not the actual directing force, for safety.

The reason that safety must be treated differently by management is that the actual achievement of a good safety record is an attitude or state of mind, and the proper attitude toward safety must be engendered from the top. Top management must show by action that it is truly interested in safety and that safety is not to be treated lightly. Management must interest itself in safety, not only because of the dollars involved, but because of the needless suffering that can result from poor safety procedures.

Accidents cost money, insurance costs money. It is obvious that management has a big stake in preventing accidents and lowering insurance costs and can therefor afford to spend more time and money in preventing them. It is conservatively estimated that the water utility industry incurs a total economic loss of more than $60 million a year due to needless accidents, money that could be well spent in upgrading utilities and providing better water for the consumers. We are literally throwing away over $60 million a year due to accidents which could have been prevented.

What can or should top management do in carrying out its responsibilities on safety? Safety begins with an attitude and a way of life, and certainly the place to create such an atmosphere is at the top of an organization. In other words, management's greatest responsibility, and its greatest attainment, is to be able to create an atmosphere throughout the organization that everything must be done to promote personal and public safety practices. For good safety practices mean good business operation, and the requirements of any job are never so urgent that safe practices cannot be followed.

Thus, management and management

alone can create the proper attitude with respect to safety, and a proper attitude is the prime requirement in any safety program. If we are to motivate the employees to work safely, we must create an atmosphere or safety climate and surround our employees with it. This brings me to the most important point I want to make.

It is a point which I am sure is well known to all of you, but unfortunately has been forgotten by most. It is exemplified by the fact that you can't sell refrigerators to Eskimoes. Why? Because the climate isn't right. I want to talk about safety climate. I think that insofar as safety, the practice of safety, and the practical accomplishments of safety are concerned, it is the most important thing in the world. We know that where we live, too much rain comes at times, or it is too cold or too hot. God makes that kind of climate, and there is not much that you can do about it. I want to talk to you about another kind of climate: the climate in which you work, the climate in the home, the climate that the boss creates for you, and the kind of climate he creates for safety.

Now, let's look at this climate in business and see who is responsible for it. Somebody must set the stage, and somebody must take the lead in saying what kind of climate for safety is going to surround a water utility. Who is that somebody? Well, it is the boss—and mark my words, if the bosses do not proclaim by their actions, by their orders, by their writings, and by their everyday conduct in administration of the company the kind of climate for safety that you'd expect, you are sure to get something that you don't expect—you can be sure it will not grow safety. There are probably many synonyms for this climate for safety that I am talking about. They may be "safety mindedness," "safety consciousness," and the like, but they do not quite have the meaning of the word "climate," that I want you to understand. This climate I keep referring to is a contagious thing. It has some exuberance, some enthusiasm, some zip to it. It isn't just a passive, half-conscious state of suspended animation. It means that enough people have caught the zest for doing the job right. It is not only unpopular and disgraceful to do it wrong, but every employee must be willing to do something about it—even to the extent of giving an offender "hell."

Let me give you an example of "climate for safety." Large amounts of time, energy, thought, and ingenuity have gone into the development of the overall water safety programs for the past several years. During that time, hundreds of representatives of water utilities have attended courses and seminars that have been devised and designed for the creation of a more favorable safety climate. It is hoped that we are improving the safety climate in most of our water departments. This climate is something that we must be constantly concerned with and work at to develop. It must be created and sustained by the enthusiastic local guidance and backing of the boss. When I say, "boss," I mean anyone who supervises people, regardless of his title. It must have the positive action and support of supervision at every level and it needs, in order to succeed, to have the continuous and genuine cooperation, interest, and support of every man on the work force.

During the past 30 years, the technology of safety has improved many, many fold. All you need do is look at the exhibits at every National Safety Congress and you will see all the gadgets for the prevention of injury to all parts of the body that are available to all types of industry. However, all the personal protective equipment in the world will not prevent an accident if it is not used and used properly every time.

People in our utilities, in our division, district, and distribution crews have short memories for this kind of thing. They forget policies and rules unless they are constantly reminded of them. Every form of communication such as first aid classes, on-the-job safety instruction, group safety meetings, safety contests, frequently changed safety posters, listings in local newspapers of safety records and doings are all good. There are literally hundreds of communications that, provided they have the ingredients of enthusiasm, interest, and continuity, all have the effect of keeping alive that elusive, all important climate for safety.

When dealing with an individual, the supervisor must realize that by demonstrating his own sincerety and willingness to understand and help, many individual morale problems can be improved. In addition, as a means of developing the proper attitude, there are two other major techniques which a supervisor can use: listening, and participation. While listening sincerely and encouraging an employee to talk, many supervisors find that quite often the trouble a person has will diminish and may even disappear. As supervisors, we must actually desire to know what our employees are saying and to understand their problems.

Participation is also important in developing a proper attitude and motivating the employee to work safely. Practically all employees want to be responsible, want to participate in decisions which have an effect upon them, and if they are given an opportunity to participate in such decisions, they will accept more responsibility for their execution and will utilize more imagination, initiative, and energy in carrying out such assignments. Supervisors who let their subordinates participate in planning will find their attitude greatly improved and their cooperation much higher. Many times, a supervisor hesitates to utilize the participation technique because he feels it will take too much time. The use of participation does take more time and patience than giving a direct order. Superficially, it would seem that production would suffer when using participation. It would be much simpler to give a direct order and have it carried out without question. This, of course, does not tell the complete story. By taking a situation from the time it is conceived until it is actually carried out, we may very well find more time being spent in the initial planning phase by using participation. However, when the work is being done there is less chance of misunderstanding and there is more cooperation among those who are carrying out the assignments. In addition, if their own ideas and suggestions have been taken into consideration in the project, they will consequently attack the job with more interest and enthusiasm and with less chance of committing unsafe practices. Thus, participation will actually result in a decrease in total time needed to complete an assignment. Direct orders are quick, but direct orders require considerable checking and rechecking, and employees do not feel particularly responsible for the successful completion of the assignment.

One of the most common errors of supervision is to take communication for granted and assume that employees know in detail what is going on. Good communication is an absolute necessity for the maintenance of a proper attitude. All people have the same wants, the same hopes, fears, ambitions, feelings, and aspirations, so it is essential that the supervisor, to motivate the people he supervises to develop a healthy attitude toward safety, maintain a high degree of communication with them.

In conclusion, these things that help to grow safety in the minds and actions of people working in our utilities are not things that can be done this week, this month, or this year and then be forgotten for awhile. There is nothing in the world quite as elusive and temporary or transitory as a good safety climate. Many people in an organization must be enthusiastically interested constantly about safety to keep the climate good.

It takes much more than lip service to keep the right climate for safety in our utilities. It takes the sustained effort of the boss, the supervisor, the foremen, and the willingness and the cooperation of the work force every day in the year—year in and year out—to create a habit, a prece-

dent, and *esprit de corps* for the climate of safety.

You and I have an obligation to create the right kind of climate for safety. That obligation is one that everyone should take as a matter of course when he accepts employment in a water utility. If we can give our people this concept and belief in the future, you may be sure that the results will be a further reduction of injuries of all kinds, and in turn, will improve the operations of the water utilities in which we work.

78 A11.1

MOTOR VEHICLE SAFETY

By CALVIN N. TROUDT
Assistant Managing Director, Colorado Safety Association

The great strides made in the past fifty years in reducing the number of industrial accidents have proved that accidents can be prevented. It is not an easy task, nor is it always pleasant, as stern measures and strict adherence to rules and regulations are often necessary to enforce safe practices and bring about a reduction in accidents.

Today our nation's streets and highways are the scenes of thousands of motor vehicle accidents, which is a concern of everyone. The needless deaths, countless injuries, and the great financial loss are certainly reasons for immediate and careful attention.

The steady increase in the number of vehicles registered each year is taxing our streets and highways beyond our capacity and available funds to provide the necessary improvements. Increased vehicle loads, high speeds, and a wide range of motor vehicle travel complicate the problem. Safety cannot be legislated. Strict enforcement of traffic control has had its effects, but much more needs to be done. Industrial fleet mileage is only a small portion of the nation's annual 1,332 billion miles, but it is a part of it, and it is our responsibility to do something about it. The well-worn expression, "every journey begins at the first step," can well apply to the task of reducing motor vehicle accidents.

As a supervisor, foreman, or whatever your position is on the management team, you do have the responsibility and opportunity to "spread the gospel" of accident prevention. To effectively use your efforts to prevent motor vehicle accidents, your first step should be to become knowledgeable about the problem as it concerns the nation, your state, the water utility industry, your utility, and finally, your particular area of responsibility.

National and local statistics are always available and easy to obtain from local safety councils or state agencies. Of course, your water utility industry statistics are of prime interest. Therefore, the AWWA accident prevention committee collects motor vehicle accident data from the water utilities annually. A reporting form is distributed each January with the annual safety reporting form used to collect the employee statistics. Utilities are asked to indicate the accidents that have occurred by type and cause.

It is very difficult to put a dollar cost on vehicular accidents, but any money spent in this manner, including insurance premiums, is bound to be less if we can reduce the number of accidents and resulting injuries to the irreducible minimum. The three E's of safety, engineering, education, and enforcement, can play an important part in your role of preventing accidents. We suggest that adding three more E's—enthusiasm, energy, and excitement—in your effort will, in the long run, reward you for a job well done.

Management Position

Management must take a positive position regarding motor vehicle accidents by applying all these E's. They should ask the question: "What should we expect of our drivers?" Answer: "We must expect that our drivers will operate their vehicles in such a manner that they will not cause injury to the public or to themselves." They should also operate so they do not cause damage to property or equipment. Most of all, they should operate their vehicles efficiently and in conformity with all laws and ordinances.

We must also ask ourselves the question, "Are all accidents preventable?" To answer this, we must look at the problem

logically. When we do, we come up with the conclusion that most accidents are preventable by one, or maybe both, of the drivers involved in an accident. In other words, we have to distinguish between the meaning of the words "preventability" and "responsibility" and whether our operator has done all that is reasonable to avoid the accident. When we do this, perhaps it is obvious that all accidents are not preventable.

In taking a position, it is necessary that a statement of policy be made. For example, we might say that our policy is to provide adequate driver training and safety literature so that our drivers will be safe, efficient, skilled, and have a proper attitude in conducting themselves on the highways. This will enhance our reputation in the eyes of the community and will match the good service given to our customers in other ways. Regardless of what is stated in our policy, it must be workable and realistic. Although a small organization may be able to function without a safety policy statement, larger organizations are at a disadvantage unless they publish their safety policies. In declaring a policy, the following statements are basic:

1. That the utility intends to comply with all safety laws and ordinances.
2. That the safety of its employees, the public, and its operation are paramount.
3. That safety will take precedence over expediency or shortcuts in operation of the utility.
4. That every attempt will be made to reduce the possibility of accident occurrence.

Any policy declaration should be signed by the chief executive of the utility. It should be given wide publicity and should set the pace of operation for both field and management employees. Such a policy makes it easier to promote and enforce the safety practices and conditions. It makes it easier for supervision to comply with utility policy. It makes it easier to follow employee safety instructions. Finally, it makes it easier to obtain good preventive maintenance of equipment or selection of proper equipment when purchased.

Regardless of what position is established by management, it is absolutely necessary that consideration be given to adequate evaluation of driver performance. This can be accomplished in several ways.

1. Compare cost vs. miles driven for individual drivers.
2. Determine from the records the number of preventable or responsible accidents for individual drivers.
3. Have operator evaluated by a driver trainer over a planned course.
4. Have the immediate supervisor of the operator ride with individual drivers when performing their regular duties.

It should be remembered that the evaluating process should be continuous on a scheduled basis. In other words, do not wait for a man to have an accident before he is evaluated.

Driver responsibility to vehicle

Although a few accidents occur because of a faulty vehicle, in most of these cases the cause can be traced back to neglect by the driver.

The driver should pay particular attention to the following points:

1. Start the engine in a smooth manner; never racing it.
2. Warm up the vehicle at a steady speed, but avoid idling the engine unnecessarily.
3. Utilize proper selection of gears and shift gears correctly so that you maintain an even engine speed.
4. Drive the vehicle at a steady speed, adhering to all motor vehicle rules and regulations.
5. Use good driving judgment so as to avoid vehicle abuse which could tend to lead to extensive vehicle repairs.
6. Synchronize speed with timing of the traffic signals so as to avoid numerous stops and the constant utilization of brakes and gears.
7. Stop the vehicle smoothly so as to conserve brakes and make certain that the emergency brake is disengaged when the vehicle is in operation.
8. Make sure to turn off the ignition key when the vehicle is to be parked.
9. Remove the key and lock the vehicle when it is to be left unattended.
10. When starting from a parked position, circle the vehicle to make sure that driving area is entirely clear of children and pedestrians.
11. Constantly be aware of the fact that the operation of utility cars and trucks on the streets and highways is a vital part of the utility's association with the public and therefore the utmost in courtesy is to be employed.

Preventive Maintenance

The driver is also responsible for day-to-day preventive maintenance operations to make certain that the following items are in good order: tires (air pressure, wear, cuts, etc.,) brakes, lights (operative and clean), sun visors, mirrors, defrosters, seat belts, instrument gauges, directional and parking signals, steering gear, horn, door latches, and windshield wipers. In the event the driver discovers a defect in any of the above items, or should other mechanical trouble be noted, the condition should be reported immediately on a "driver report" form and submitted to the transportation department or utility garage.

Defects which will affect the safe operation of the vehicle should be corrected before the vehicle is taken out on the road.

The driver of a utility vehicle should maintain a neat and orderly arrangement of materials as well as a satisfactory overall appearance of the vehicle. The driver should make certain that the vehicle receives the regularly scheduled periodic inspection required by the utility, as well as those which may be required by the state.

Reporting and Investigating Accidents

Generally, when we think of accident reports and investigations, we associate them with vast amounts of paper work. A certain amount is necessary and accident investigation and analysis have been called by some a "post mortem" approach and a hindsight method. However, such negative viewpoints on reporting and investigating tend to obscure what a tremendous tool this is in preventing future accidents.

Let's take a look at the reporting and investigating of vehicle accidents from a more positive point of view.

Any paper work (records) must answer the questions:

1. Is the question necessary for legal reasons? (Fulfill requirements of law and government).
2. Will it help do the job better? Control-analysis. (Can't do the job without it.)

When a motor vehicle accident takes place, a form is necessary for legal reasons, such as for the purpose of claims and insurance. However, that is this form's only function. The legal facts required are the date and time of accident, the driver's name and age, a description of the damage to the vehicles and injuries, if any, a diagram of the street, and a description of what happened. Generally, the space for the description of the accident is three lines a quarter of an inch apart. The implication is, "Be brief." I suspect that for legal reasons, the less committed to black and white on paper, the better it is. It is absolutely amazing the amount of detail there is about the extent of damage to each vehicle, the directions the cars moved after the crash, what "he" or what "she" said, etc. Seldom is any mention made of what happened just prior to the collision. I think a defending lawyer would go out of his mind if the accident report read something like this: "I was traveling down the street about 20 miles per hour. There was this good looking girl in white shorts walking on the sidewalk that I was watching and I didn't even see the car ahead stopped for a stop sign. I smashed into the rear of it." Can you imagine having that record

subpeoned into court?

My point is that the insurance form is for the cold, detailed facts of the case, without commitment either way. That record is necessary, but it is foolhardy to sit at a desk, shuffle these reports, and expect to make an analysis of why accidents are happening. The real reasons are not there. If you don't know where you are and where you are going, any road will lead you there. I suspect the plan of many safety programs is a shotgun approach—spread out in many directions at once in the hope that something will hit. Generalities like "Be safe, drive safely, be alert." Each of us has his own definition of these words, and I doubt that we would be in agreement on anything except broad, general definitions. We have nothing specific to shoot at. To be able to zero in on specific problems, face-to-face personal interviewing on each and every accident is necessary. All accidents, from the high damage, injury-involved accident down to the little fender bender in a parking lot must be investigated. That statement may seem idealistic, but it is imperative—a must! Only if you do this, will you get the true analysis of what really is happening and begin to assimilate a pattern as to where your particular problem is.

As we collect and analyze information from personal investigation, we can apply the law of 20-80. We know that in many cases 80 per cent of the problems can be resolved by concentrating on 20 per cent of the possible causes. In a few minutes we will talk about the problem areas for water utility drivers that we have found in our annual analysis of water utilities.

The physical fact of investigating every accident says to your drivers that you, the supervisor, care, and that accident prevention is more than just lip service on the part of management.

All behavior is motivated. To be sure that a particular type of behavior will take place, we must apply the motivation. Feelings and emotions are the fundamental motivators for behavior. Consciously or subconsciously, an individual is constantly accepting or rejecting, and his decision is based on things as he sees them. The act of investigating every accident equally, fairly, and impartially by the driver's immediate supervisor speaks louder than any utility's statement of policy, set of rules, or incentive give-away program.

An investigation does not have to be a formal thing. However, enough time must be allocated so that the accident can be completely explored. Some utilities use toy cars to recreate the situation, adding another dimension. The objective of this type of investigation is to examine all of the factors leading up to the vehicle impact and look for the driver errors involved. The investigation must reach a conclusion that the accident was preventable or nonpreventable from the standpoint of no reasonable errors on the part of the driver.

Problem Areas for Water Utility Drivers

A study of accident reports will show that automobile accidents can be broken down into two categories, namely, preventable and nonpreventable. We are primarily concerned with accidents that our drivers could have prevented by taking some action that they failed to take. These are the preventable accidents.

I want to make it clear that we must always be mindful of the fact that sometimes a driver involved in an accident can be blameless, but morally at fault, and if this be so, he has had a preventable accident. For example: Vehicle A is traveling on a through street. The driver sees vehicle B approaching from the left at a high rate of speed on a stop street. The driver of vehicle A fails to slow down or take any other evasive action. When B gets to the corner, he suddenly realizes that he should have stopped. He tries, but it's too late. He skids into the intersection and there he meets A, where they collide. Of course, A had the legal right-of-way, but he could have prevented the accident. I grant you that this is an exception, but let's not

forget that accidents like these are preventable, even when A is a water utility driver.

For the most part, water utility drivers are good drivers—they are alert, skillful, and courteous, but year after year they embarrass themselves and their utilities by doing some pretty stupid driving. For example, backing is always a No. 1 cause of accidents. Fortunately, most of them are not serious, but occasionally they are. Like backing over a child who has decided to play at the rear end of a vehicle that has been parked. All vehicles have reverse gears, but it is a gear that is seldom used. For every 100 miles driven in forward gears, I doubt that the average water utility would be backing more than a quarter of a mile. My guess is, then, that the ratio of going forward as against backward is about 500 to 1. If we agree that drivers don't get much practice backing, I hope we will also agree that it must be done cautiously, slowly, and after making sure the way is clear. Several utilities have reduced their number of backing accidents by keeping a constant reminder before the driver to look before he backs. These utilities use a green ring attached to the door handle reminding the driver before he gets into his car to check to the rear if he intends to back.

Following too closely is another trouble area for water utility drivers: Failure to keep a space cushion between them and the vehicle ahead. This space cushion, whether great or small, is kept by the driver traveling to the rear. The old maxim, "Keep a minimum distance between you and the car ahead of you—one car length for each ten miles of speed," can sometimes be hard to sell.

Failure to yield right-of-way is another big reason for water utility vehicle accidents. Driving through stop signs, pulling from the curb or from a parked position into a vehicle already in traffic, make up many of our preventable accidents.

Speed, or as we often say, "Too fast for conditions," is another large contributor to the red side of the ledger. Many of these "speed" drivers think only of how fast they can go, never giving a thought as to how fast they can stop. Fast driving can be misleading when it comes to saving time. Perhaps you have heard the story about an experiment that took place several years ago in a large city. Two passenger cars started from the same point at the same time, to travel a distance of about 25 miles. One driver was told to go as fast as he could, pay no attention to speed limits, lights, or any other traffic regulations. The other driver was told to obey all the rules. In other words, he was instructed to drive safely. To make a long story short, the reckless driver won this 25-mile race by only seven minutes.

Some other causes of preventable accidents are loss of control (skidding on wet or icy pavements), misjudging clearance, making left turns in the face of oncoming traffic, and failing to signal intentions.

The list goes on. The AWWA motor vehicle accident analysis form which is mailed to utilities each year for reporting their accident data lists different types of preventable accidents. When these forms are returned to AWWA and the final totals are made, we find figures opposite each cause and, not unexpectedly, we also find a rather large figure in the "other" category. It seems that we cannot design a practical form that will include all of the causes of automobile accidents. The strange thing about our situation is that we know where our problems lie. For example, backing, following too closely, collision with fixed object, driving too fast for conditions, etc. We know what to do to prevent these accidents, but what we don't know is how to get all of our drivers to do these things—to look before they back, to maintain a space cushion, and so on.

Driver Selection

1. *Physical Condition.* What is the prospective driver's visual acuity? Can this person see quickly and distinctly at a distance? Different utilities have different minimum standards. The most severe

require 20/20, 20/30, or 20/40 vision. Does the prospective driver have diabetes, heart trouble, hypertension, or hernia? How about his height? Is he too tall to get in the vehicle, or is he too short to see over the hood? Is he too fat to get under the wheel? These are some of the questions that should be answered by a doctor who knows the needs of your utility. Your physical standards should be spelled out so that there is no question about your minimum standards.

2. *Education and Intelligence.* Many utilities administer intelligence tests, such as the Wunderlich, mechanical comprehension, and so on. Nearly all drivers require a certain amount of education. Surely, anyone driving should be able to read and write. It is necessary that he be able to follow written traffic directions and to exchange information with others in the event he is involved in an accident.

3. *General Attitude.* How about the driver's attitude toward others in his daily life? If you know the person and believe he is antagonistic and overly aggressive, it is not likely that he will change when he gets behind the wheel of a vehicle. In fact, just about the only drivers that do change are the Caspar Milquetoasts who become tigers while they are driving. Some authorities state that a good attitude is "caught," not "taught." But is is something that must be reckoned with. The driver can be mentally, physically, and emotionally sound, he can know all the rules and regulations, and possess all the driving skills of an Indianapolis 500 champion, but with the wrong attitude he gets into traffic trouble time and time again.

4. *Driving Skills.* Many utilities give over-the-road tests in their driver selection procedure. A qualified checker rides with the driver and observes all the driving actions taken. A printed checklist of the most frequent driving actions is scored by the checker. For example, does he observe traffic conditions, both front and rear, before pulling out from curbs? Does he back the vehicle slowly? Does he observe the speed limit? etc.

5. *Miscellaneous Information.* Some utilities check the driver's credit rating, his moral habits, etc. It is a well known fact that drivers must concentrate on driving. Persons heavily in debt, those who have problems at home and are under strong emotional stress, are more inclined to get involved in accidents than those who do not have these worries. So, selection is highly important, and in most cases driving errors and poor driving habits will pop up during your selection procedure. Fortunately, many of these discrepancies can be corrected. A man whose vision is only 20/60 can, in most cases, be brought into range with glasses. Proper diet can cause reduction in weight, blood pressure, and so on. Driving errors can be corrected through a driver training program.

Training Programs

A good driver training program can cause a dramatic reduction in the number of accidents, and there is more than one good program presently available. The National Safety Council offers an eight-hour defensive driving course in accident avoidance. These courses are conducted throughout the United States through local safety councils and similar organizations. Drivers who are unable to attend the regular classroom course can still receive professional training in defensive driving via tape cassettes called the "Self-instruction Defensive Driving Course." The complete self-instruction course consists of two tape cassettes, one response manual, and one student workbook. The Harold Smith Driving Improvement Institute offers a one-week course to train individuals in how to become driver trainers. This program teaches the five seeing steps, and the course is conducted out on the road by putting five trainees in a station wagon and having them ride and drive alternately while teaching them the five seeing steps of accident-free driving. The Bell Telephone Company has an eight-hour course that closely parallels the National Safety Council course. It does not include over-the-road training, and everything is done in the classroom.

Nothing is likely to take the place of good training. Training tells your people what is expected of them. All of us do better if we know what is expected of us. Training gives knowledge and develops skills. It can change attitudes. This is another way of telling employees that management is spending money, time, and effort on safety instead of just finding ways of saying, "Be careful."

To summarize, let us briefly review the methods that can be used to motivate people to have better driving records.

Management must take a strong position and get across to their drivers that utility vehicles must be operated in such a manner they will not cause injury to the public or to themselves. The position of the utility can be stated best by the chief executive officer. Drivers can prevent many of the accidents by following common sense rules of maintenance, by driving smoothly, and by making sure their vehicles are in good shape. Reporting and investigating accidents can be a deterrent to potential future accidents. A good, factual, written report helps with the investigation, and a good investigation brings out the remedial actions that can be used to benefit the erring utility driver. We have shown you that our automobile accidents are certainly no different from those in other industries. We back into trouble, we follow too closely, we disobey traffic signs, we drive too fast. The AWWA automobile accident analysis shows that we have more than 50 kinds of accidents. Driver selection has always been a problem. In most cases the men are employed because they have some special skills not related to driving. They drive because they must, not because they can.

Finally, we have outlined briefly, but I hope with enough force to arouse your interest in some of the driver training programs that can be made available to you and your drivers. I urge you to adopt a good, safe driving course because training gives knowledge, develops skills, and can change attitudes.

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