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JOURNAL OF PRODUCTS LIABILITY

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VOLUME 4, 1981



Legal and Practical Considerations for The Creation of Warning Labels and Instruction Books*

Kenneth Ross†

Introduction

It has long been the law that manufacturers have a duty, in appropriate situations, to provide adequate warnings and instructions with the sale of their product. Adoption of the theory of strict liability has accentuated this duty and made it more visible and important as a potential cause of action against a manufacturer.

Even before the adoption of strict liability as the predominate theory in products liability law, there were many lawsuits for failure to adequately warn under the theory of negligence. It is now clear that failure to warn can turn an otherwise safe product into one that is unreasonably dangerous and defective under the theory of strict liability. In order to recover under such a theory, it is necessary for the claimant to prove four things:

- 1) the product is defective;
- 2) the product reached the consumer without substantial change;
- 3) the defect rendered the product unreasonably dangerous; and
- 4) the unreasonably dangerous defect caused injury to the consumer or ultimate user.

There are three basic ways for an injured party to prove that a product was defective. The first, and usually easiest to prove, is a manufacturing defect. A manufacturing defect is created when the ultimate product deviates in some material way from the manufacturer's design specifications or performance standards or from identical units of the same product line.

The second major way for a product to be manufactured in a defective manner is in design. Basically, a design defect is one

**The opinions expressed herein are those of the author only and not necessarily those of the Westinghouse Electric Corporation or its Law Department.*

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where the injured party proves that the design exposed the user of the product to a reasonably preventable risk. In many jurisdictions, the trier of fact employs a balancing test between the burden imposed on the manufacturer to minimize the risk or hazard through design changes versus the likelihood of harm and seriousness if that harm occurs.

The last major way for a manufacturer to create a defective and unreasonably dangerous product is through marketing defects. Marketing defects involve

- 1) the failure to provide any warning of the risks or hazards involved in the use of a product;
- 2) the failure to provide an adequate warning of the dangers, risks and hazards involved in the use of a product;
- 3) the failure to provide appropriate and adequate instructions and directions for the safe use of a product.¹

Existence of the Duty to Warn

Before the manufacturer can be charged with failing to provide warnings or instructions, it is necessary for a legal duty to arise.

Generally, a manufacturer or product supplier has a duty to warn of a danger in the product if:

- 1) The product is dangerous;
- 2) This fact is or should be known to the manufacturer or product supplier;
- 3) The danger is not one which is obvious or known to or readily discoverable by the user; and
- 4) The danger is not one which arises only because the product is put to some unforeseeable, unexpected use.

The first general exception to creation of a duty to warn is that there is no need for a manufacturer to warn of an open or obvious danger. Determination of whether a danger is obvious to the user is made by the trier of fact. When deciding this question, a court or jury may take into account the status, intelligence and training of the particular user subjected to the hazard.² Thus, it is possible that an experienced electrician need not be warned about the danger of coming into contact with live electrical parts.

1. Keeton, Products Liability — Inadequacy of Information, 48 Texas Law Review 398 (1970).

2. *Collins v. Ridge Tool Co.*, 520 F. 2d 591 (7th Cir. 1975).

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A manufacturer should be very careful not to overestimate the intelligence and training of a particular user. While it is not necessary to make a product idiot-proof, the manufacturer should still take into account that not all individuals who may encounter the product will be as experienced and intelligent as the manufacturer thinks reasonable.

Some courts have overruled this exception and held that, in some circumstances, the manufacturer or product supplier must warn of obvious and open dangers.³ These courts hold that even if a risk is obvious, the manufacturer has a duty to warn if the average consumer might not fully appreciate the extent of the dangerous condition.

If the plaintiff has been specifically warned of a danger by someone other than the manufacturer, that person may not then recover against the manufacturer for failure to warn.⁴

The last general exception to creation of a duty to warn is that the manufacturer must only warn of foreseeable dangers. Dangers or misuses of a product which are not reasonably foreseeable need not be considered by the manufacturer in determining what warnings are necessary. A manufacturer should analyze reasonably foreseeable dangers and misuses of the product broadly. While it is not necessary to foresee bizarre misuses of the product, the manufacturer should not assume that what it thinks is reasonable is what some potential user will think is a reasonable use or misuse of that product.

In *Thibault v. Sears, Roebuck & Co.*,⁵ the plaintiff, contrary to "easily readable" instructions, tried to mow a steep slope and injured his foot when it slipped under the blade housing. The court ruled that the danger was not only open and obvious but that the manner in which the product was used by the plaintiff was neither intended nor reasonably foreseeable. The court held in part:

... Manufacturers cannot foresee and warn of all absurd and dangerous uses of their product. ... The duty to warn is concomitant with the general duty of the manufacturer, which is limited to fore-

3. *Micallef v. Miehle Co.*, 39 N.Y.2d 376, 348 N.E.2d 571 (1976); *DeSantis v. Parker Feeders, Inc.*, 547 F.2d 357 (7th Cir. 1976).

4. *McIntyre v. Everest & Jennings, Inc.*, 575 F.2d 155 (8th Cir. 1978).

5. 395 A.2d 843 (N.H. 1978).

seeing the probable results of the normal use of the product or a use that can reasonably be anticipated.' *McLaughlin v. Sears, Roebuck & Co.*, 111 N.H. 265, 268, 281 A.2d 587, 588 (1971).

The United States Department of Commerce's model Uniform Product Liability Act (hereinafter referred to as "UPLA") sets forth in Section 104(C)(4) that "a manufacturer shall not be liable for its failure to warn or instruct about dangers that are obvious; for 'product misues' as defined in Subsection 112(C)(1); or for alterations or modifications of the product which do not constitute 'reasonably anticipated conduct' under Subsection 102(g)."

Some critics argue that the open and obvious danger exception may encourage the manufacture of obviously dangerous products. The Department of Commerce counters by saying that this is unlikely to occur under the UPLA since the manufacturer of an unreasonably unsafe product may still be subject to liability. In addition, the Department of Commerce reasons that requiring a manufacturer to warn about matters that are obvious would tend to reduce the effectiveness of the warnings and that warnings, in order to be effective, should be selective.

To Whom Should Warnings Be Given?

In general, the duty to warn runs to all whom the supplier or manufacturer should expect to use the chattel or be endangered by its use including purchasers, users, consumers and handlers of the product. See, *Restatement of Torts* (2d), Section 388, Comment a.

In addition, there is authority that a manufacturer must make sure that the warning goes to the original or ultimate purchaser of the product, employees of the purchaser and third persons exposed to foreseeable and unreasonable risk of harm by failure to warn.⁶

While it is unclear whether this duty to warn extends to an injured bystander, it has been held that a manufacturer or seller is liable for failure to warn third persons who might be considered nonusers of the product, but might be foreseeably subjected to danger.⁷

6. *McLaughlin v. Mine Safety Appliances Co.*, 11 N.Y.2d 62, 181 N.E.2d 430 (1962).

7. *Eck v. Du Pont & Co.*, 393 F.2d 197 (7th Cir. 1968).

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In many situations, these general requirements are difficult to meet particularly when a product is not sold to the ultimate user. One of the leading cases which discusses this issue and offers some relief to manufacturers is *Reed v. Pennwalt Corp.*⁸ This case involved an injured food processing employee who received burns from a caustic solution despite wearing rubber gloves. The court held that the employee could not recover under strict liability from the caustic manufacturer because the manufacturer met its duty by adequately warning the *employer* of the hazards. The employer had its own safety program and the manufacturer had no control over the product after the sale. In addition, the manufacturer had no effective means of warning the ultimate user and the product was not in the original container. In these situations, the responsibility to warn shifted to the employer and his negligence superseded the liability of the manufacturer.

The court in *Reed* discussed the principle of superseding or intervening cause by quoting Prosser, *Law of Torts*, Section 102 at pages 667-668 (4th ed. 1971), as follows:

On the other hand, it is ordinarily not reasonably to be expected that one who knows that a chattel is dangerous will pass it on to another without a warning. Where the buyer is notified of the danger, or discovers it for himself, and delivers the product without warning, it usually has been held that the responsibility is shifted to him, and that his negligence supersedes the liability of the seller.

Further, the *Reed* court stated in part:

The doctrine is particularly appropriate when, as here, the intermediate buyer is a large industrial concern with its own safety programs and method of product distribution and where the manufacturer may have no effective means of communicating the warnings to the ultimate user. The supplier has fulfilled its duty when it gives adequate warning to the intermediate buyer or supervisory personnel and the product is not in the original can, box, or form, such as a grinding disc, and it is reasonable to expect that the intermediate buyer has a safety program and that it will communicate whatever is necessary to the ultimate users.⁹

This limitation on the general rule as enunciated in *Reed* has been adopted by the UPLA in Section 104(C)(5). This section provides that:

30 (1962).

8. 22 Wash. App. 748, 591 P.2d 478 (1979).

9. 591 P.2d at 481.

A manufacturer is under an obligation to provide adequate warnings or instructions to the actual product user unless the manufacturer provided such warnings to a person who may be reasonably expected to assure that action is taken to avoid the harm, or that the risk of the harm is explained to the actual product user.

For products that may be legally used only by or under the supervision of a class of experts, warnings or instructions may be provided to the using or supervisory expert.

For products that are tangible goods sold or handled only in bulk or other workplace products, warnings or instructions may be provided to the employer of the employee-claimant if there is no practical and feasible means of transmitting them to the employee-claimant.

Although there are very few reported cases which specifically allow the manufacturer to warn the employer and not the employee, analysis to this section states that it follows generally accepted law in this area. As can be seen from the *Reed* decision, there are certain stringent requirements for this exception to apply. As a result, the manufacturer should try, in all circumstances, to get the warning directly to the employee either through a warning label or an instruction book. If this is not possible, be sure to document facts which would substantiate the requirements for this exception. In the situation where the employer refuses to accept the warnings, this substantiation might be difficult. At that point, the manufacturer must make a decision whether to sell the product to that purchaser at all.

Sufficiency of the Warning

Once a duty to warn arises, a decision must be made whether that warning is adequate under the circumstances. A court has held that an adequate warning is one that could be reasonably expected to catch the attention of a reasonably prudent person in the circumstances of its use and the content must be understandable and convey a fair indication of the nature and extent of the danger to that person.¹⁰

Other courts have defined an adequate warning as one which provides the following:

- 1) Identify the gravity of the risk involved;
- 2) Describe the nature of the risk so that the user will understand it;

10. *Bituminous Casualty Corp. v. Black & Decker Mfg. Co.*, 518 S.W.2d 868 (Texas, 1974).

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- 3) Provide the user with information that will allow him to avoid the hazard; and
- 4) Be clearly communicated to the person exposed to the hazard.

Some general factors which must be considered are conspicuity of the warning, the use of symbols or pictograms, adequate communication of the level of risk, the location of the warning label on the product, and the clarity of the warning language on the label itself.

In the area of symbols and sufficiency of the words, it has been held that a particular warning was insufficient because it did not take into account that the users were illiterate.¹¹ Thus, the manufacturer should consider the potential user and his general level of intelligence and understanding and, if necessary, there should be symbols representing the possible hazard.

In *Bituminous Casualty Corp. v. Black & Decker Manufacturing Co.*,¹² a worker was injured when a grinding machine exploded during use. The warning stated: "WARNING: Thread wheel on spindle by hand. Do not thread wheel by starting motor. Use safety guard." The court held this warning to be inadequate because it did not adequately communicate the level of danger. In addition, the court held that misuse of the product is no defense if the misuse is foreseeable and one which an adequate warning would have prevented.

In another case, the court held that a warning was inadequate because it did not state the severity of the risk and the nature of the hazard.¹³ The warning stated:

This product contains asbestos fiber. Inhalation of asbestos in excessive quantities over long periods of time may be harmful. If dust is created when this product is handled, avoid breathing the dust. If adequate ventilation control is not possible wear respirators approved by the U.S. Bureau of Mines for pneumoconiosis producing dusts.

In discussing the adequacy of the warning, the court explained that none of the warning language intimated the severity of the risk. The court stated that the mild suggestion that inhalation of asbestos in excessive quantities over a long period of time "may be

11. *Hubbard-Hall Chemical Co. v. Silverman*, 340 F.2d 402 (1st Cir. 1965).

12. See footnote 10.

13. *Borel v. Fibreboard Paper Products Corporation*, 493 F.2d 1076 (5th Cir. 1973); cert. denied, 419 U.S. 869 (1974).

harmful" conveys no idea of the extent of the danger. The warning that a worker should "avoid breathing the dust" was not helpful because there was no way for insulation workers to avoid breathing asbestos dust. As for wearing respirators if adequate ventilation control is not possible, the injured personnel never worked in any place where there was adequate ventilation and respirators were ineffective.

As previously stated, location of the warning label is important in determining whether the warning is sufficient. In *Griggs v. Firestone Tire & Rubber Co.*,¹⁴ a tire and rim assembly exploded, causing permanent injury to a workman securing a wheel to a truck. At an earlier date, the rim components of the wheel had been mismatched. Firestone catalogs described the need to use properly matched parts to assemble wheels, but this literature was not available to many local service stations. Firestone "assumed that most people servicing its rims would realize the dangers presented and possess the requisite aptitude and experience to assemble the rims safely."¹⁵ The court did not agree and held: "... reasonable care may dictate that a warning be impressed directly on the article when (as here) the danger is great and such a warning would not be impracticable or unduly burdensome."¹⁶

Courts have generally held that the manufacturer can fulfill its duty to manufacture a safe product by providing adequate warnings. This was the general rule even if it was possible for a manufacturer to redesign the product and make it safer. This traditional view has been significantly eroded by some recent decisions.

In *Uloth v. City Tank Corp.*,¹⁷ the Massachusetts Supreme Court held that "there is a case for the jury if the plaintiff can show an available design modification which would reduce the risk without undue cost or interference with the performance of the machinery" even where "there are warnings found to be adequate." Any prudent manufacturer should design its product as safe as possible and only provide warnings where there are risks or hazards which still remain.

14. 513 F.2d 851 (8th Cir. 1975); cert. denied, 423 U.S. 865 (1975).

15. 513 F.2d at 859.

16. 513 F.2d at 858.

17. 384 N.E.2d 1188 (Mass. 1978).

danger. The warning "must" was not helpful to avoid breathing adequate ventilation never worked in any and respirators were

g label is important in it. In *Griggs v. Fire* assembly exploded, causing a wheel to a truck. At wheel had been misused to use properly literature was not available "assumed that most dangers presented and to assemble the rims . . . reasonable care directly on the article warning would not be

manufacturer can fulfill its obligation by providing adequate warning. It is possible for a manufacturer to be safer. This traditional view is consistent with recent decisions. The Massachusetts Supreme Court has held that a plaintiff can show an increase in the risk without the manufacturer's "adequacy of the machinery" adequate." Any prudent manufacturer should be as safe as possible and warn of hazards which still

There are many federal statutes and agencies which have promulgated regulations concerning the format of various warning labels. Such agencies are the Consumer Product Safety Commission, the Environmental Protection Agency, the Occupational Safety and Health Administration, the Nuclear Regulatory Commission and the Department of Transportation. Failure to follow these regulations will allow a court to hold the warning label inadequate *per se*. On the other hand, merely complying with these federal standards does not mean that the warning label is adequate if a more adequate label is appropriate.

Post-Sale Duty to Warn

Various decisions over the past 20 years have recognized that a manufacturer has a duty to warn of the existence of hazards which are discovered after the product has been sold. The basic decisions are *Comstock v. General Motors Corp.*,¹⁸ *Braniff Airways, Inc. v. Curtiss-Wright Corp.*,¹⁹ *Noel v. United Aircraft Corp.*,²⁰ and *doCanto v. Ametek, Inc.*²¹

These decisions have based liability on negligence and not strict liability. Therefore, the liability is failure to exercise reasonable care in light of the discovery of the danger after the sale of the product. In addition, this post-sale duty has always related to conditions existing at the time of sale. The obligation is to exercise reasonable care to seek replacement or recall of products that were defective when sold or to warn about an unusual risk or hazard that was inherent in the product when sold but which was not then adequately warned about (usually because it was not discovered until after the sale).

While there have been very few cases which have clearly identified a post-sale duty to warn, the UPLA, in Section 104(C)(6), recognizes such a duty and states that the subsection is in accord with basic negligence case law. The subsection places an obligation on the manufacturer to act with reasonable care to learn about serious risks connected with its product after it is manufactured and when

18. 358 Mich. 163, 99 N.W.2d 627 (1959).

19. 411 F.2d 451 (2d Cir. 1969).

20. 342 F.2d 232 (3d Cir. 1964).

21. 328 N.E.2d 873 (Mass. 1975).

it learns of such a risk, it is to act as a reasonably prudent manufacturer to inform product users or appropriate persons about the risk.

In determining how far a manufacturer has to go in meeting this duty, the court in *Braniff Airways, Inc. v. Curtiss-Wright Corp.*,²² stated in part:

It is clear that after such a product has been sold and dangerous defects in design have come to the manufacturer's attention, the manufacturer has a duty either to remedy these or, if complete remedy is not feasible, at least to give users adequate warning and instructions concerning methods for minimizing the danger.²³

The *Braniff* case seems to indicate that the manufacturer might have a duty to actually remedy the defect or hazard discovered after the sale. There has been very little judicial direction given to manufacturers about their obligations in this area. Once a defect or hazard is discovered, a manufacturer has many responses that can be taken — ranging from doing nothing all the way to supplying the part and installing it at no cost.

The UPLA, in the analysis to Section 104(C)(6), states that in some situations a general warning through advertising may be all that a manufacturer can provide and that the standard is one of reasonableness and not strict liability. The court in *Rekab, Inc. v. Frank Hrubetz & Co.*,²⁴ held that the manufacturer met his duty by advising an amusement park owner by letter of the product problem and forwarding a replacement part for free. The park operator failed to install the new part on the machinery and was held liable to the injured persons.

A recent case,²⁵ now on appeal to the Texas Supreme Court, would require a manufacturer to do a great deal in warning about or remedying a post-sale safety problem. In this case, a helicopter tail rotor blade had a history of inflight fatigue fracture failures. Bell Helicopter recommended to owners of this type of blade that they have certain inspections performed after a certain number of hours. In addition, Bell began to design an improved blade. Prior to the date of the accident, Bell distributed to owners and operators information concerning the availability of a new tail rotor blade.

22. See footnote 19.

23. 411 F.2d at 453.

24. 261 Md. 141, 274 A.2d 107 (1971).

25. *Bell Helicopter Co. v. Phil Bradshaw*, 594 S.W.2d 519 (Tex. Civ. App. 1979), appeal docketed No. B-9231, Supreme Court of Texas.

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Texas Supreme Court, deal in warning about this case, a helicopter e fracture failures. Bell ype of blade that they rtain number of hours. ed blade. Prior to the iers and operators in- tail rotor blade.

(iv. App. 1979), appeal docketed

The court in *Bell* held that they did not adopt the rules in *Noel v. United Aircraft Corp.*, *supra* or *Braniff Airways, Inc. v. Curtiss-Wright Corp.*, *supra*. However, the court held Bell Helicopter responsible and stated in part:

... Here, Bell assumed the duty to improve upon the safety of its helicopter by replacing the 102 system with the 117 system. Once the duty was assumed, Bell had an obligation to complete the remedy by using reasonable means available to it to cause replacement of 102 systems with 117 systems.

This is a developing area which should be watched carefully. Product manufacturers should have a system for discovering post-sale safety problems. These manufacturers should seriously consider warning their product users even where a duty to do so does not clearly exist. Preventing accidents should be of utmost concern and giving such warnings will help obtain that result.

Guidelines for Preparing Warning Labels

In order to improve a label's effectiveness, it is advisable for a manufacturer to develop guidelines for its personnel to follow when creating warning labels. One manufacturer, FMC Corporation of Chicago, Illinois, has developed a product hazard communication system which combines symbols with recognizable meanings and normal words of warning.

FMC suggests a warning label which contains three elements. First, the warning label should have a signal word which clearly identifies the nature and extent of the danger. The next portion of the warning label should be a symbol or pictogram which communicates the nature of the hazard and consequences that can result from failing to heed the warning. The third portion of the warning label would be the words which describe how the hazard can be avoided. A sample label containing these elements is shown in Figure 1.

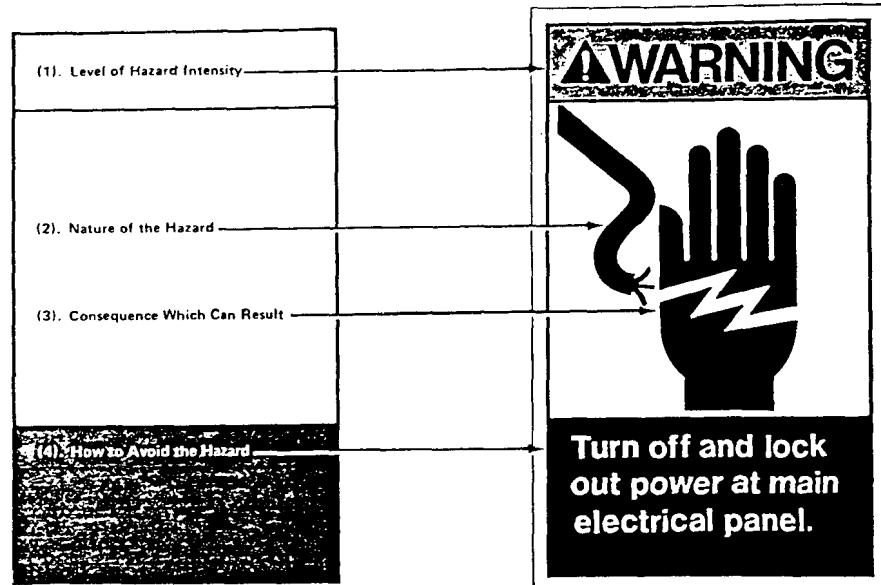
The signal word or hazard intensity level identifies the nature and extent of the hazard by using words with defined meanings. FMC Corporation recommends the following words and definitions:

- 1) DANGER — Immediate hazard which *will* result in severe personal injury or death.
- 2) WARNING — Hazard or unsafe practices which *could* result in severe personal injury or death.

WARNING LABELS AND INSTRUCTION BOOKS

- 3) CAUTION — Hazard or unsafe practices which could result in minor personal injury or product or property damage.

Colors are used to reinforce the message and seriousness of the hazard. Each level should have a corresponding color such as red for danger, orange for warning and yellow for caution. Colors and words should not be interchanged.



Source: FMC Corporation

Figure 1.

The next portion of the warning label would be the symbol or pictogram. The visual message should be in the immediate vicinity of the hazard and should contrast with the background and instantaneously identify the nature or seriousness of the hazard. The pictogram should depict an easily recognizable portion of the body and part of the machine. Research performed by FMC for their program demonstrated that a visual portrayal of the hazard and the interaction of the person with it is more effective than a representation of only one of these elements.

which could result in damage.

and seriousness of the hazard such as red for caution. Colors and



Source: FMC Corporation

ould be the symbol or the immediate vicinity of the hazard. The pictogram of the body and FMC for their protection the hazard and the alternative than a represen-

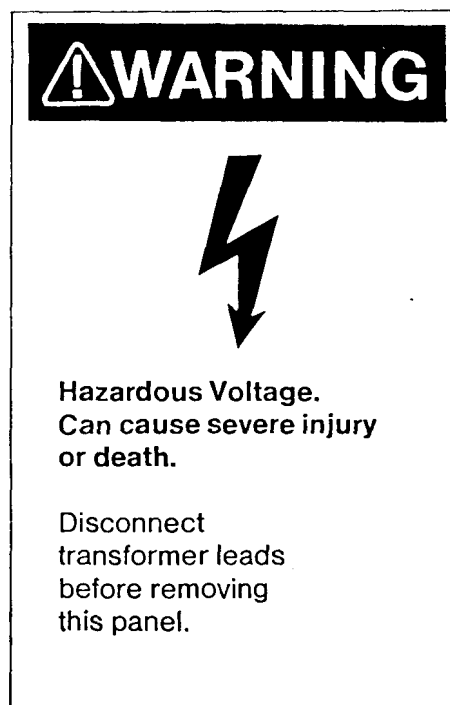


Figure 2.

An alternative warning label is shown in Figure 2. (This alternative has not been proposed by FMC.) With this warning label, the signal word and the pictogram are the same as FMC's. The difference is that the pictogram does not carry the entire message. The alternative label contains words to identify the type of hazard that may be encountered and the consequences for failing to obey the warning. These are the first verbal messages following the symbol and are displayed in bold type. The last part of the label tells the reader how to avoid the hazard. This message tends to be longer and more detailed.

Guidance must be given to the manufacturer's personnel in the following areas:

- 1) How to select the correct signal word;
- 2) Things to consider in developing adequate labels such as who will read the label and in particular their education, training and experience, dress and clothing, and anatomical differences.
- 3) How to determine where labels are to be placed, including reading distance, viewing angle and lighting.

- 4) How to write a warning label.
- 5) How to select a symbol or pictogram, with consideration to government regulations and industry standards.

The guidelines should contain master artwork for routine symbols or pictograms, a layout sheet for preparing the warning label and sample color swatches.

Whatever guidelines are created, there should be an effort by manufacturers to institute consistent warning label programs. The more a particular symbol, hazard level and warning word are used, the more likely an ultimate user will understand the warning and heed it.

Duty to Provide Instructions and The Creation of Instruction Books

It is necessary to differentiate between the duty to warn and the duty to provide adequate instructions. The duty to warn is usually satisfied by placing a label on the product in an appropriate location giving sufficient words of warning to the ultimate user. These labels focus on helping the ultimate user avoid an unsafe use of the product.

Directions or instructions serve a different purpose. They affirmatively instruct the user in the proper and safe use of the product. In many cases, instruction books will also contain warnings which may allow the manufacturer to adequately meet its duty to warn and instruct. Most of the time, however, there should be inter-related warnings on the product and in the instruction books.

While instructions serve a different purpose than warnings, their adequacy is judged in the same manner. A court held a manufacturer liable in strict liability when the instruction book failed to adequately warn the ultimate user of the dangers of improper assembly of the product.²⁶

Instruction books should be created while the product is being developed. Also, it would be useful for a manufacturer to prepare the instruction book before deciding what warning labels will be placed on the product. The process of creating an instruction book can be helpful in analyzing the hazards inherent in the product.

26. *Midgley v. S.S. Kresge Co.*, 55 Cal.App.3d 67, 127 Cal.Rptr. 217 (1976).

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The front page of the instruction book should contain an effective date and a clear description of the previous instruction books it is replacing. The instruction book should also contain some type of contractual protective language. Assuming that the seller has obtained some type of contractual protection, the instruction book should not modify the contract or lessen the effectiveness of this protection. Therefore, it is recommended that a disclaimer of warranties and limitation of liability clause be included in the front of the book.

This clause would basically state that the contract between the parties states the entire obligation of the seller and that the contents of the instruction book shall not become part of or modify any prior or existing agreement, commitment or relationship. In addition, there could be a statement that there are no express or implied warranties set out in this book, and the only warranties that apply would be those in the existing contract.

The next portion of the disclaimer language should state that the information in the instruction book is not all inclusive and is not and cannot take into account all unique situations. Lastly, there should be a clause limiting the seller's liability in the event a court did hold that the instruction book created some new warranties.

The next important part of the instruction book could be a safety page. This page would very generally delineate the product's major safety concerns with a reference to appropriate areas of the instruction book that contain further instructions. Next, the safety page could contain the definitions used for Danger, Warning and Caution in the instruction book and on the warning labels.

Instruction books should contain most of the following elements:

- 1) Introduction
- 2) Description
- 3) Receiving, handling, storing
- 4) Installation
- 5) Operation
- 6) Inspection, maintenance, adjustment
- 7) Overhaul and repair
- 8) Supplementary information

The instruction book should contain very few, if any, warnings which use the signal word Danger. The situations where Danger is

used should be limited to extremely unsafe conditions. It should also be the case that there are many more Dangers, Warnings and Cautions in the instruction book than are on the product.

This raises the question of how to interrelate the warning label system and the instruction book. Certainly, every Danger in the instruction book should appear in a warning label on some portion of the product. Also, the content of every warning label on the product should appear some place in the instruction book. Beyond that, there are few useful guidelines. If there are many Warnings and Cautions in the instruction book, it might be necessary to include on the warning label a statement that the instruction book should be read carefully before attempting to handle, install, use or service the product. The warning label could also contain the general statement that failure to follow the instructions in that book could result in severe personal injury or death. Such a warning could also be placed in the introduction to the instruction book.

Some of the same guidelines for writing warning labels apply to writing instructions and warnings in instruction books. It is necessary to keep the ultimate reader in mind. The manufacturer must consider such things as that person's education and experience, mechanical aptitude, manual dexterity and intelligence. Also, the book should be written to reach the lowest common denominator. It is better for the book to be too simplistic than too complex for any foreseeable reader to understand.

For warning labels, one of the requirements is that it get to the ultimate user. Likewise, although there are no specific cases on point, the same analysis would apply to instruction books. Instruction books should get in the hands of the ultimate user or person subjected to the hazard. Where feasible, it would be advisable to attach an instruction book to each product. Instruction books should also be sent to management personnel of the purchaser who may not have actual access to the product itself. Also, the manufacturer should be able to document exactly who received the instruction book in the event that some problems arise in the future.

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Conclusion

It is important for the manufacturer to create adequate warnings and instructions in order to minimize hazards and improve safety, to avoid accidents, to improve the efficiency and reliability of the product, and to improve the quality of the product in the minds of its customers. Unfortunately, many manufacturers think of warnings and instructions too late and do not utilize sufficient resources for their creation. This is a mistake and one that the manufacturer might regret. It is hoped that this article has given background into the legal requirements for warnings and instructions and offered some practical hints on their creation.