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The Duty to Warn and Instruct for Safe Use in Strict Tort Liability Symposium - Texas Community Property Law in Transition.

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THE DUTY TO WARN AND INSTRUCT FOR SAFE USE IN STRICT TORT LIABILITY

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I. INTRODUCTION

Strict tort liability represents an innovation in traditional tort law formally articulated seventeen years ago in the Restatement (Second) of Torts.[1] As a twentieth century legal doctrine, strict tort liability reflects, and is predicated upon, the economic and social philosophies that have evolved and flourished in our modern society. Among the socio-economic bases that underlie the strict tort liability concept is the perceived recognition that product suppliers possess a greater capacity than injured consumers to bear the catastrophic cost of injuries sustained in product involved accidents.[2] As a corollary of this rationale, the manufacturer or other supplier in the marketing chain is deemed to occupy a better position for distributing product-related losses to the general consuming public in the form of increased product cost. Another rationale frequently utilized to justify adoption of the strict tort liability doctrine is deterrence. The imposition of strict liability on a product supplier purportedly insures that the supplier will introduce

1. RESTATEMENT (SECOND) OF TORTS § 402A (1965).

2. *See, e.g.*, Foster v. Day & Zimmermann, Inc., 502 F.2d 867, 871 n.2 (8th Cir. 1974); Lechuga, Inc. v. Montgomery, 467 P.2d 256, 261 (Ariz. Ct. App. 1970); Greenman v. Yuba Power Prods., Inc., 60, 377 P.2d 897, 901, 27 Cal. Rptr. 697, 701 (1962).

only safe products into the channels of commerce.[3]

Despite its recent appearance on the tort stage, the doctrine of strict tort liability has, for all practical purposes, replaced negligence, implied warranty and contract as the principal cause of action in product involved accidents. This has occurred because the impeding factors necessary to establish liability under the more traditional theories of liability are absent under strict tort liability. For example, privity of contract has been abrogated as a requirement for prosecuting an action in strict tort liability. Additionally, unlike the common-law negligence cause of action, the conduct of the product supplier is irrelevant. Rather, the essence of strict tort liability is the condition of the product itself.[4]

A cause of action predicated on strict tort liability is comprised of four essential elements: (1) a defective product; (2) that reaches the consumer without substantial change in its condition from the time of original sale; (3) that contains a defect that renders the product unreasonably dangerous; and (4) causes injury to the ultimate user.[5] The defect itself may be in the form of a manufacturing flaw, a defect in design, or the subject of this article, a marketing defect.[6] Marketing defects, as distinguised from manufacturing and design defects, involve (1) the failure to provide any warning whatsoever of the risks or hazards involved in the use of the prod-

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3. *See* Brizendine v. Visador Co., 305 F. Supp. 157, 160 (D. Or. 1969), *aff'd*, 437 F.2d 822 (9th Cir. 1970); RESTATEMENT (SECOND) OF TORTS § 402A comment c (1965). *See generally* Prosser, *The Fall of the Citadel (Strict Liability to the Consumer)*, 50 MINN. L. REV. 791, 799 (1966).

4. *See, e.g.*, Jackson v. Coast Paint & Lacquer Co., 499 F.2d 809, 812 (9th Cir. 1974); Palmer v. Avco Distrib. Corp., 412 N.E.2d 959, 961-62 (Ill. 1980); Gonzales v. Caterpillar Tractor Co., 571 S.W.2d 867, 871 (Tex. 1978).

5. *E.g.*, Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1272 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974); Thomas v. St. Joseph Hosp., 618 S.W.2d 791, 797 (Tex. Civ. App.—Houston [1st Dist.] 1981, no writ); Gravis v. Parke-Davis & Co., 502 S.W.2d 863, 868 (Tex. Civ. App.—Corpus Christi 1973, writ ref'd n.r.e.); *accord* Union Supply Co. v. Pust, 583 P.2d 276, 282 (Colo. 1978); Reid v. Spadone Mach. Co., 404 A.2d 1094, 1097 (N.H. 1979). Some jurisdictions have eliminated the requirement of unreasonably dangerous. For a general review of the cases, see Fruend v. Cellofilm Properties, Inc, 432 A.2d 925, 929 (N.J. 1981).

6. *See, e.g.*, Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 654 (1st Cir. 1981) (design defect in manufacture of oral contraceptive); McKisson v. Sales Affiliates, Inc., 416 S.W.2d 787, 790 (Tex. 1967) (permanent wave solution contained manufacturing defect); Pearson v. Hevi-Duty Elec., 618 S.W.2d 784, 788 (Tex. Civ. App.—Houston [1st Dist.] 1981, writ ref'd n.r.e.) (dangerous nondefective product without adequate warning is marketing defect).

uct, (2) the failure to provide an adequate warning of the dangers, risks and hazards involved in the use of a product, and/or (3) the failure to provide appropriate and adequate instructions and directions for the safe use of a product.[7] The trier of fact must ascertain whether a product flawlessley produced and designed may nevertheless possess such potential danger to the user in the absence of an appropriate warning that it becomes defective simply because of the warning's absence.

II. The Duty to Warn or to Provide Instructions

A. *When the Duty Arises*

An actionable marketing defect cause of action is comprised of five essential elements. Initially, there must exist a risk of harm that is inherent in the product or that may arise from the intended or reasonably anticipated use of the product. Second, the product supplier must actually know or reasonably foresee the risk of harm at the time the product is marketed. Third, the product must possess a marketing defect, *i.e.*, a failure to provide any warning of the danger, a failure to provide an adequate warning of the danger or hazard, and/or a failure to provide adequate or appropriate instructions and directions for avoiding the hazard or danger in the use of the product. Fourth, the absence of the warning and/or instructions must render the product unreasonably dangerous to the ultimate user or consumer of the product. And finally, the failure to warn and/or instruct must constitute a causative nexus in the product user's injury.

The first two of these factors are essential in establishing a duty to warn or instruct. The duty to warn or to instruct presupposes both an inherent product danger and a known or foreseeable danger at the time of marketing.[8] In the absence of either of these two

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7. *See* Keeton, *Products Liability - Inadequacy Of Information*, 48 Texas L. Rev. 398, 398-99 (1970); *see also* Ortho Pharmaceutical Corp. v. Chapman, 388 N.E.2d 541, 549 (Ind. Ct. App. 1979) ("an absence of proper warning . . . can range from a complete absence of any warning to a warning which is given but is inadequate"). A defect necessarily includes a lack of adequate warnings. Fabian v. E.W. Bliss Co., 582 F.2d 1257, 1261 (10th Cir. 1978).

8. *See* Martinez v. Dixie Carriers, Inc., 529 F.2d 457, 465 (5th Cir. 1976) (duty to warn arises when product is unreasonably or inherently dangerous); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1088 (5th Cir. 1973) (seller under duty to warn of dangers that are reasonably forseeable), *cert. denied*, 419 U.S. 869 (1974). The duty to warn contemplates

crucial factors, a duty to provide warnings and instruction is absent. Each of these elements merit individual attention.

The duty to warn has generally been perceived to arise when the risk or harm presented by a product exceeds the danger normally contemplated or anticipated by the ordinary consumer.[9] As formulated in the Restatement, the article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it.[10] Underlying the duty to provide an adequate warning of the dangers associated with the product use is the rationale that the ultimate user of the product is entitled to all meaningful information of a product's characteristics necessary to make an informed choice whether the utility and need for the product outweighs the potential risk of harm attendant to its use.[11] All products necessarily present some potential risk of harm either in their intended or reasonably foreseeable use or environment of use.[12] It does not follow, however, that a product posing some risk

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all potential dangers which are known or which could have been known. *See, e.g.*, Lindsay v. Ortho Pharmaceutical Corp., 637 F.2d 87, 91 (2d Cir. 1980); Caplaco One, Inc., v. Amerex Corp., 572 F.2d 634, 636 (8th Cir. 1978); Hall v. E.I. Du Pont De Nemours & Co., 345 F. Supp. 353, 361 (E.D.N.Y. 1972).

9. *See, e.g.*, Burton v. L.O. Smith Foundry Prods. Co., 529 F.2d 108, 112 (7th Cir. 1976) (basic test of defect is failure to meet reasonable expectations of ordinary user); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1088 (5th Cir. 1973) (must be so dangerous a reasonable man would not buy if knew danger), *cert. denied*, 419 U.S. 869 (1974); Southern Cal. Edison Co. v. Harnischfeger Corp., 175 Cal. Rptr. 67, 74 (Cal. Ct. App. 1981) (reasonable man standard applies to determine unreasonable danger).

10. RESTATEMENT (SECOND) OF TORTS § 402A comment i (1965). Comment i specifically provides that "[t]he article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics." *Id.*

11. *See, e.g.*, Hagans v. Oliver Mach. Co., 576 F.2d 97, 99 (5th Cir. 1978); Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1274-75 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1088-89 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974). The duty to warn depends on the foreseeability of serious harm. *See* Hohlenkamp v. Rheem Mfg. Co., 601 P.2d 298, 301 (Ariz. Ct. App. 1979); Cavers v. Cushman Motor Sales, Inc., 157 Cal. Rptr. 142, 149 (Cal. Ct. App. 1979). Since the duty to furnish a warning or instruction for safe use involves a balancing of the risk of harm against the cost of providing a warning, the critical issue focuses on reducing or eliminating excessive preventable dangers by providing the user with adequate warnings and instruction for safe use. Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1274-75 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974).

12. *See* Korpela, *Failure To Warn As Basis Of Liability Under Doctrine Of Strict Liability In Tort*, 53 A.L.R. 3d 239, 251 (1973). Korpela noted "since the use of almost any product involves some degree of danger, the duty of a manufacturer to warn of danger must be related, or made dependent upon, the degree of danger involved in the use of the prod-

of harm should not be marketed. Rather, the ultimate user is entitled to sufficient knowledge of the significant dangers to weigh the risk of harm against the need for the product. Of course, when the product is determined to be unreasonably dangerous per se, then no warning or instruction for use will justify marketing the product.[13]

B. Scope of the Product Supplier's Duty

As the basis for providing an adequate warning of the hazards in the use of products and appropriate instructions for the safe use and the avoidance of potential dangers associated with a product, the product supplier is obligated to keep abreast of the current state of knowledge and advances of its product available through research, reports of dangers, scientific developments and technical breakthroughs.[14] This means that the supplier is held to the stan-

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uct." *Id.* at 251; *see also* Little, *Product Liability—The Growing Uncertainty About Warnings*, 12 FORUM 995, 997 (1977). The author observes that, "[i]t is fairly well settled that the manufacturer or seller need not give warning of such dangers or problems as present only a very slight risk of harm or from which the damage or injury would, at best, be minimal." *Id.* at 997.

13. *See, e.g.*, Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1981); d'Hedouville v. Pioneer Hotel Co., 552 F.2d 886, 892 (9th Cir. 1977); Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1273-74 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974). The court in Needham v. White Laboratories, Inc., 639 F.2d 394, 401 (7th Cir. 1981) adopted a two-step analysis for determining if a product is "unreasonably dangerous per se":

> Once it is determined that the product is unavoidably unsafe and that the danger is warned against, it must be determined whether the product is so unsafe that marketing it at all is 'unreasonably dangerous per se.' In order to decide whether the product is unreasonably dangerous per se, a court must balance the utility of the product against its dangers.

Id. at 401.

14. *See* Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1277 (5th Cir.) (manufacturer is held to skill of expert in his field and is presumed to possess an expert's knowledge of arts, materials and processes of business), *cert. denied*, 419 U.S. 1096 (1974); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1089 (5th Cir. 1973) (manufacturer held to knowledge and skill of expert), *cert. denied*, 419 U.S. 869 (1974); Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978) (if manufacturer should have known of potential dangers adequate warnings must be given). In Dias v. Daisy-Heddon, 390 N.E.2d 222 (Ind. Ct. App. 1979) the court noted that, by analogy to prescriptive drug cases charging a manufacturer with the knowledge of the risk known to science during the period in which the plaintiff was using the product, manufacturers in other type cases likewise are charged with the knowledge of experts in their fields of interest. *Id.* at 226-27. The manufacturer is obligated to keep abreast of the current state of knowledge gained through research reports, scientific literature and other methods. *See, e.g.*, Lindsay v. Ortho Pharmaceutical Corp., 637 F.2d 87, 91 (2nd Cir. 1980); Baker v. St. Agnes Hosp., 421 N.Y.S.2d 81, 85 (N.Y. App. Div. 1979).

dards of an expert on the particular product and presumed to know all the dangers that exist in a product at the time it is marketed.[15] Excusable ignorance which is a relevant issue in a negligence action is simply immaterial in strict tort liability. The ultimate emphasis is the knowledge of potential risk that is known or that reasonably should have been known based on available data.[16]

When it becomes known or is reasonably foreseeable to a manufacturer that a particular product may pose a serious risk or danger when used for its intended or reasonably anticipated purposes, the product supplier must balance the potential risk of harm against the product usefulness in determining whether or not to market the product. In determining this balance, such relevant factors as the normal expectations of the consumer as to the manner in which the product will perform, the degree of simplicity or complication that is involved in the use of the product, the magnitude of the danger to which the user will be exposed, the likelihood of harm to the user, and the danger avoiding effects of a warning must be considered.[17] When the balance is not struck in favor of the utility of the product then no warning will be adequate to prevent the product from being characterized as unreasonably danger-

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Allen v. Upjohn Co., [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9173 (Tenn. App. 1982).

15. *See* Karjala v. Johns-Manville Prod. Corp., 523 F.2d 155, 159 (8th Cir. 1975); Seley v. G.D. Searle & Co., 423 N.E.2d 831, 837 (Ohio 1981); Walter v. Valley, 363 So. 2d 1266, 1270 (La. Ct. App. 1978).

16. *See, e.g.*, Basko v. Sterling Drug, Inc., 416 F.2d 417, 426 (2nd Cir. 1969); Hall v. E.I. Du Pont De Nemours & Co., 345 F. Supp. 353, 361 (E.D.N.Y. 1972); Woodill v. Parke Davis & Co., 402 N.E.2d 194, 198 (Ill. 1980). *But see* Keeton, *Products Liability—Inadequacy Of Information*, 48 TEXAS L. REV. 398, 404 (1970).

> [I]f the sale of the product under all the circumstances under which it was marketed subjected the consumer or others to an unreasonable risk of harm, the seller is subject to liability, and it is not relevant that he neither knew nor could have known nor ought to have known in the exercise of ordinary care that the unreasonable risk actually existed. It is enough that had he known of the risk and dangers he would not have marketed the product at all or he would have done so differently.

Id. at 404.

17. *See* Cavers v. Cushman Motor Sales, Inc., 157 Cal. Rptr. 142, 148-49 (Cal. Ct. App. 1979). The court in *Cavers* noted that merely providing that a product was dangerous "would turn every manufacturer into an insurer as long as the plaintiff could show (a) that the product contained no warning and (b) that he was injured while using it." *Id.* at 149. Liability based solely on a finding of danger without consideration of balancing relevant factors is inappropriate. *See generally* Little, *Products Liability—The Growing Uncertainty About Warnings*, 12 FORUM 995, 997 (1977).

ous per se.[18]

When the utility of the product outweighs its harmful effects, then the product is not necessarily unreasonably dangerous to market.[19] This means that the risk of danger is outweighted by the beneficial purposes in making the product available and it is not unreasonably dangerous per se.[20] The court, in the first instance, must determine whether the harmful effects of the product both qualitatively and quantitavely outweigh the legitimate public interest in having the particular product available.[21] If qualitatively and quantitatively a particular product serves the public good, then the product is not unreasonably dangerous as marketed provided the product is accompanied by an adequate warning.[22] The

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18. *See, e.g.*, Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1981); Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1273-74 (5th Cir. 1974); Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978). Perhaps the most succinct analysis of this principle is captured in Needham v. White Laboratories, Inc., 639 F.2d 394, 400 (7th Cir. 1981). "[A] court will impose strict product liability even if a warning is given if the product remains unsafe when the warning is followed and the risk of danger outweighs any apparent usefulness of the product." *Id.* at 400.

19. *See* RESTATEMENT (SECOND) OF TORTS § 402A comment i (1965). Under comment i a product is unreasonably dangerous only when it is dangerous to an extent beyond that contemplated by the ordinary consumer. *Id.* In order to prevent a product from being unreasonably dangerous, the seller may be required to provide direction for safe use or a warning of the risks of harm attendant to its use. RESTATEMENT (SECOND) OF TORTS § 402A comment j (1965). Some products are unavoidably unsafe and under the current state of scientific and technological knowledge cannot be made safe. The unavoidably unsafe products likewise may be marketed provided the utility of the product outweights the risk of harm. RESTATEMENT (SECOND) OF TORTS § 402A comment k (1965).

20. *See* Needham v. White Laboratories, Inc., 639 F.2d 394, 401 (7th Cir. 1981). The evaluation of a product as unreasonably dangerous per se in the absence of an adequate warning was suggested in Keeton, *Products Liability—Inadequacy Of Information*, 48 TEXAS L. REV. 398, 404 (1970).

21. *See, e.g.*, Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1981); Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1274 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1088-89 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974). As suggested in *Brochu* if the court determines that the dangerous propensity is unnecessary, then the product, regardless of its utility is defective unless the danger is unavoidable and the utility of the product is great. Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1981).

22. RESTATEMENT (SECOND) OF TORTS § 402A comment j & k (1965). Under these circumstances, liability for marketing product may be avoided provided the product is accompanied by the proper warning. *See, e.g.*, Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1974); Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1274 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974); Wolfgruber v. Upjohn Co., 423 N.Y.S.2d 95, 97 (1979). This qualitative analysis was undertaken in Racer v. Johnson & Johnson [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9082 (Mo. App. 1981), involving a flammable disposable

failure to provide an adequate warning of the known or reasonably knowable risks of harm in an otherwise beneficial product makes the product unreasonably dangerous.

In addition to adequately warning the user concerning the dangers inherent in the intended uses of the product, the supplier is obligated to warn of those dangers and hazards inherent in a reasonably foreseeable but unintended use of the product.[23] It is not incumbent upon the product supplier, however, to warn of every risk of harm or mishap that may occur in the use of a product.[24] In particular, the product supplier is not required to foresee or anticipate bizarre or wholly unexpected product misuse.[25] If the rule were otherwise, the supplier would assume the status of insurer.[26] Except for the most philosophically expansive jurisdictions, the doctrine of strict tort liability does not transform a product supplier into an insurer for product related injuries.

The duty to warn, once invoked, is not necessarily continuing in nature after the product has been marketed. As noted by the New

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drape used in performing D & C surgery. In making the requisite analysis, the court noted:

> It is a highly useful product which affords substantially increased protection against infection during surgical procedures. Its water-repellant attributes increase these protections. In the state of knowledge at the time of the injury no material making the product fire resistant was available which did not adversely affect its barrier against infection or create potential injury to the patient from allergy or disease. It is also clear that it is highly flammable. It is designed for gynecological surgery where use of a cautery is not unusual. In such a posture, we conclude that the evidence supports the conclusion that liability under Section 402A could attach to a drape because of its flammable nature *in the absence of a warning of that danger* (emphasis added).

Id. ¶ 9082, at 21, 111.

23. *See,e.g.*, Seibel v. Symons Corp., 221 N.W.2d 50, 54-55 (N.D. 1974) (warning of danger from foreseeable misuse of product must be adequate to point out danger of injury from any misuses); Technical Chem. Co. v. Jacobs, 480 S.W.2d 602, 603 (Tex. 1972) (product not defective; danger was failure to warn consumers of improper use); Lopez v. ARO Corp., 584 S.W.2d 333, 335 (Tex. Civ. App.—San Antonio 1979, writ ref'd n.r.e.) (seller owed duty to give adequate warnings of dangers of using tool as grinder without guards).

24. *See* Stief v. J.A. Sexauer Mfg. Co., 380 F.2d 453, 462 (2d Cir. 1967); Jamieson v. Woodward & Lothrop, 247 F.2d 23, 25-26 (D.C. Cir. 1957).

25. *See, e.g.*, Caplaco One, Inc. v. Amerex Corp., 435 F. Supp. 1116, 1119 (E.D. Mo. 1977) (when indicator on fire extinguisher read "RECHARGE" it was obvious to ordinary user that extinguisher contained an improper amount of pressure); McCaleb v. Mackey Paint Mfg. Co., 343 So. 2d 511, 514 (Ala. 1977) (use of flammable chemical as paint thinner around operation which produced substantial heat and sparks was unintended use); Thibault v. Sears Roebuck & Co., 395 A.2d 843, 848 (N.H. 1978) (product misuse and abnormal uses are defenses to strict liability).

26. The concept of absolute liability for product related accidents contravenes the purpose and intent of Restatement (Second) of Torts § 402A (1965).

Jersey Court in *Jackson v. New Jersey Manufacturers Insurance Co.*:[27]

> There is no duty upon the seller of a machine faultlessly designed and manufactured, . . . , to notify its customers after the time of sale of changes in the state of the art concerning the safe operation of such machine and advise them to install any new, updated or improved safeguards developed since the time of sale.[28]

The concept of a continuing duty to warn is unrealistic in the marketing environment for most products, except perhaps those products sold for which the manufacturer maintains some form of permanent record or preserves contact with the purchasers. The imposition of a continuing duty is a rather unrealistic concept in the context of either disposable products or products that are distributed in volume on a national basis. There may be justification for issuing warnings of newly discovered risks or dangers for products that are recorded and the user's identity is readily discoverable.[29] The same capacity for continuous warning may be available for ethical drugs since only the physician may prescribe the drug after making an informed choice. Therefore, the individual to whom the duty of warning is owed is readily identifiable and supplemental information can be distributed. In most product sales, however, the product is sold without any record of the purchaser or the product's ultimate destination. A continuing duty to warn, therefore, appears inappropriate as the basis for imposing liability. Notwithstanding this obvious limitation, several jurisdictions have imposed a continuing duty to warn of newly discovered dangers.[30]

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27. 400 A.2d 81 (N.J. Super. Ct. App. Div. 1979).

28. *Id.* at 89.

29. *See* Kozlowski v. John E. Smith's Sons Co., 275 N.W.2d 915, 923-24 (Wis. 1979). In *Kozlowski* the court in evaluating the concept of a continuing duty to warn concluded that the determinative factor was the feasibility of the seller in keeping a record of all purchases and the extent of the market for a particular product. *Id.* at 923-24.

30. Several jurisdictions have held that after a product is sold and a dangerous defect is discovered the manufacturer has a continuing duty to provide the users with adequate warnings of the danger. *See, e.g.*, LaBelle v. McCauley Indus. Corp., 649 F.2d 46, 49 (1st Cir. 1981); Braniff Airways Inc. v. Curtiss-Wright Corp., 411 F.2d 451, 453 (2d Cir. 1969); Noel v. United Aircraft Corp., 342 F.2d 232, 242 (3d Cir. 1964); *see also* Ramp, *The Impact Of Recall Campaigns On Products Liability*, 44 INS. COUNS. J. 83, 85 (1977).

C. *Types of Risk That Mandate a Warning*

The duty to warn is imposed as a matter of law based on the unique, dangerous propensities of a particular product. Generally, marketing defects encompass products that (1) are intrinsically or inherently dangerous to the ultimate user, (2) present a high risk of danger under certain unusual and unintended uses, (3) are dangerous only to a few individuals who possess an idiosyncratic susceptibility, and (4) are unavoidably unsafe. Thus, the nature of the product constitutes the primary factor governing the duty to warn.

1. Potential Inherent or Intrinsic Danger or Harm

Certain products, because of intrinsic propensities, present the potential for serious harm to the ultimate user of the product. These high-risk products are commonly used products, such as vehicles, chemicals and heavy industrial machinery. It is rather clear that the potential for serious harm incident to normal product use is determinative in establishing the supplier's duty to provide an adequate warning and to provide directions and instructions for safe use.

In *Hamilton v. Motor Coach Industries*,[31] a mechanic sustained injuries resulting in blindness in one eye while attempting to repair a spring-loaded air cylinder used in a bus. The inherent danger of disassembling a spring-loaded cylinder created an issue whether the air cylinder was unreasonably dangerous in the absence of a warning and whether the warning (contained only in parts manual delivered to the bus purchaser and not affixed to the cylinder itself) was sufficient to provide an adequate warning to the plaintiff.[32]

Similarly, in *Hiigel v. General Motors Corp.*,[33] the plaintiff sustained injuries when the lug bolts on the wheel of his motor home

31. 569 S.W.2d 571 (Tex. Civ. App.—Texarkana 1978, writ ref'd n.r.e).

32. *Id.* at 574; *cf.* McPhail v. Municipality of Culebra, 598 F.2d 603, 606 (1st Cir. 1979) (warning in owner's manual of possibility of electrocution was adequate; posting warnings on sailboat mast would be impractical; and failure to warn was not cause of injury); Beier v. International Harvester Co., 178 N.W.2d 618, 620 (Minn. 1970) (since it was impossible for lug bolts securing inner wheels of truck to become loose while outer nuts were tight warning of this occurence in the manual would have been superfluous); Lamon v. McDonnell Douglas Corp., 576 P.2d 426, 430 (Wash. Ct. App. 1978) (dangerous features of hatchcover in DC-10 created issue of whether adequate warning had been given).

33. 544 P.2d 983 (Colo. 1975).

sheared off causing the dual wheels to become disengaged while the vehicle was in transit. The detachment occurred because plaintiff failed to apply manufacturer specified torque to the lug bolts and to test the torque pressure at designated intervals. Although the torque requirements were specified in the owner's manual, the inherent danger of improper torquing in the event the directions were ignored created a duty on the supplier to warn the user of the risks involved in failing to heed the instructions.[34]

Ordinary household products and clothing likewise possess inherent risks of harm that may trigger the duty to warn. In *Chappuis v. Sears Roebuck & Co.*,[35] plaintiff was injured when a fragment of steel from a hammer he was using struck his eye. The failure to warn that, once chipped, the hammer would likely chip again was fatal. Similarly, the inherent flammability of certain fabrics compel a warning that reasonably conveys to the purchaser the risk of ignition.[36]

The duty to warn is perhaps most frequently imposed by the high risk of harm inherent in the operation of heavy industrial machinery and chemical products. Generally, a duty to warn of the risk of harm and the instructions for safe use are critical in these types of products.[37] This duty, of course, is dictated to a significant

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34. *Id.* at 988. The court emphasized the absence of any warning of the inherent risk involved if the torque requirements were not satisfied. *Id.* at 988.

35. 358 So. 2d 926 (La. 1978).

36. *See, e.g.*, Mattocks v. Daylin, Inc., 78 F.R.D. 663, 668 (W.D. Pa. 1978), *rev'd on other grounds*, 611 F.2d 30 (3d Cir. 1979); Spencer v. Nelson Sales Co., 620 P.2d 477, 482 (Okla. Ct. App. 1980); Bellotte v. Zayre Corp., 352 A.2d 723, 725 (N.H. 1976).

37. The more serious the potential danger or risk of harm, the more important the duty to provide a full and fair warning of the risks of harm to insure the user is awarded a meaningful opportunity to make an informed choice. *See* Sowles v. Urschel Laboratories, Inc., 595 F.2d 1361, 1365 (8th Cir. 1979) (a poultry dicing machine); Harrison v. Flota Mercante Grancolombiana, S. A., 577 F.2d 968, 977 (5th Cir. 1978) (a chemical isobutyl acrylate involved); Hagans v. Oliver Mach. Co., 576 F.2d 97, 99 (5th Cir. 1978) (open blade on industrial table saw); Dougherty v. Hooker Chem. Corp., 540 F.2d 174, 179 (3d Cir. 1976) (trichloroethylene); Reliance Ins. Co. v. AL E. & C. Ltd., 539 F.2d 1101, 1106 (7th Cir. 1976) (coal box used for gas liquification); Doss v. Apache Powder Co., 430 F.2d 1317, 1321 (5th Cir. 1970) (dynamite); Posey v. Clark Equip. Co., 409 F.2d 560, 563 (7th Cir. 1969) (towmotor forklift); Rogers v. Unimac, Co., 565 P.2d 181, 186 (Ariz. 1977) (spinning extractor basket on a commercial washer extractor machine); Shell Oil Co. v. Gutierrez, 581 P.2d 271, 279 (Ariz. Ct. App. 1978) (liquid xylene); Union Supply Co. v. Pust, 583 P.2d 276, 283 (Colo. 1978) (conveyor belt system); Potthoff v. Alms, 583 P.2d 309, 311 (Colo. Ct. App. 1978) (earth moving machine scraper); Ruggeri v. Minnesota Mining & Mfg. Co., 380 N.E.2d 445, 448 (Ill. App. Ct. 1978) (volatile adhesive); Bohnert Equip., Co. v. Kendall, 569 S.W.2d 161, 165 (Ky. 1978) (large crane); Ulrich v. Kasco Abrasives Co., 532 S.W.2d 197, 200 (Ky. 1976) (power

degree by the type of the product involved. When the risk of harm is great but the utility of the product essential, the product may safely be marketed provided it is accompanied by an adequate warning of the hazards and risk of harm.[38] Conversely, when the risk of harm is great but the utility served by the product is not particularly critical, the nature and intensity of the warning is more stringently evaluated.

2. Foreseeability of Dangers From Unintended Product Use

In addition to furnishing warnings of the inherent or intrinsic dangers in the use of a product, the product supplier is obligated to warn of the dangers associated with the reasonably anticipated although unintended uses of the product.[39] The requirement of foreseeability of unintended product use is mandated by the provisions of the Restatement.[40] It is not the dangers posed by any bi-

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grinding machine); Skyhook Corp. v. Jasper, 560 P.2d 934, 939 (N.M. 1977) (warning device to be affixed to a large crane); Olson v. A.W. Chesterton Co., 256 N.W.2d 530, 535 (N.D. 1977) (dangers of a conveyor belt system); Temple v. Wean United, Inc., 364 N.E.2d 267, 271 (Ohio 1977) (power punch press); Bituminous Casualty Corp. v. Black & Decker Mfg. Co., 518 S.W.2d 868, 875 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.) (grinding cuprock attached to grinding device); Eddleman v. Scalco, 484 S.W.2d 122, 126 (Tex. Civ. App.—Beaumont 1972, writ ref'd n.r.e.) (reaction of calcium carbide in certain environment); Teagle v. Fischer & Porter Co., 570 P.2d 438, 442 (Wash. 1977) (flow rate device used to measure chemical components of agricultural fertilizer); Little v. PPG Indus., Inc., 579 P.2d 940, 947 (Wash. Ct. App. 1978) (chemical ethylchloroform), *aff'd as modified*, 594 P.2d 911 (Wash. 1979); Haugen v. Minnesota Mining & Mfg. Co., 550 P.2d 71, 75-76 (Wash. Ct. App. 1976) (power grinding machine).

38. *See, e.g.*, d'Hedouville v. Pioneer Hotel Co., 552 F.2d 886, 892-93 (9th Cir. 1977); Hall v. E.I. Du Pont De Nemours & Co., 345 F. Supp. 353, 366-67 (E.D.N.Y. 1972); Uloth v. City Tank Corp., 384 N.E.2d 1188, 1192 (Mass. 1978). *See generally* Keeton, *Products Liability—Inadequacy Of Information*, 48 TEXAS L. REV. 398, 410 (1970).

39. *See, e.g.*, Dougherty v. Hooker Chem. Corp., 540 F.2d 174, 179 (3d Cir. 1976) (triable issue of adequacy of warning where plaintiff died from inhaling trichloroethylene); Smith v. United States Gypsum Co., 612 P.2d 251, 254 (Okla. 1980) (manufacturers should have known paneling might be placed in room without windows which increases its flammability); Bituminous Casualty Corp. v. Black & Decker Mfg. Co., 518 S.W.2d 868, 873 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.) (statement of "Use Safety Guard" was not sufficient as a warning); *see also* RESTATEMENT (SECOND) OF TORTS § 402A comment h (1965). "Where, however, he [manufacturer] has reason to anticipate that danger may result from a particular use, . . . he may be required to give adequate warning of the danger." *Id.*

40. RESTATEMENT (SECOND) OF TORTS § 402A comment j (1965). Comment j states that "seller is required to give warning . . . if he has knowledge, or by the application of reasonable, developed human skill and foresight should have knowledge . . . . *Id.* In D'Arienzo v. Clairol, Inc., 310 A.2d 106 (N.J. Super Ct. Law Div. 1973) a summary judgment on the basis of contributory negligence was denied though it was clear the instructions accompanying a

zarre use of a product that dicates a duty to warn or instruct. Rather, it is the dangers presented by the known or reasonably foreseeable uses or environment of use that determine whether a duty to warn exists.[41]

Foreseeable use of a product implies both normal or intended use and reasonably foreseeable unintended uses.[42] As observed by the court in *Suchomajcz v. Hummel Chemical Co.*,[43]

> In the absence of special reason to expect otherwise, the maker is entitled to assume that his product will be put to a normal use for which the product is intended or appropriate; and he is not subject to liability when it is safe for all such uses and harm results only because it is mishandled in a way which he has no reason to expect or as used in some unusual and unforeseeable manner.[44]

In *Byrd v. Hunt Tool Shipyards, Inc.*,[45] a sandblaster-painter contracted silicosis from inhaling silica dust despite his use of a safety hood. The hood, which was designed to protect against the hazard of silicosis, was ineffective even when used with a respirator. Under these circumstances, the failure to warn that the protective hood was dangerous for its normal and intended functions rendered the product unreasonably dangerous.[46]

Most product uses are not so clear and unequivocal. The characterization of product uses as reasonably intended or foreseeable is a variable that does not lend itself to precise definition. For example, in *Thibault v. Sears Roebuck & Co.*,[47] the plaintiff was injured

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bottle of hair dye directed user to perform a patch test before each use, but failed to indicate in the directions the reason for continuing to perform the tests and failed to describe in detail the possible adverse reactions. *Id.* at 110-13.

41. *See, e.g.*, Bryant v. Technical Research Co., 654 F.2d 1337, 1343-44 (9th Cir. 1981) (failure to warn results in liability where danger is not obvious to user, and manufacturer had reason to believe that danger might result from some foreseeable use); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1088 (5th Cir. 1973) (requirement that danger be reasonably foreseeable or scientifically discoverable is significant limitation on seller's liability), *cert. denied*, 419 U.S. 869 (1974); Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978) (drug manufacturer failed to give adequate warnings since he should have known of potential harm).

42. McLaughlin v. Sears, Roebuck & Co., 281 A.2d 587, 588 (N.H. 1971).

43. 524 F.2d 19 (3d Cir. 1975).

44. *Id.* at 27. *See generally* Noel, *Products Defective Because Of Inadequate Directions Or Warnings*, 23 Sw. L.J. 256, 274 (1969).

45. 650 F.2d 44 (5th Cir. 1981).

46. *Id.* at 48.

47. 395 A.2d 843 (N.H. 1978).

as he attempted to mow a steep slope contrary to the specific procedures outlined by the seller. Mowing the steep slope in an up and down fashion rather than longitudinally along the side of the slope was deemed neither an intended nor a reasonably foreseeable use.[48] In *Ethicon, Inc. v. Parten*,[49] however, a surgical needle fractured as a physician was performing abdominal surgery. Although the physician was manipulating the needle improperly, it was noted that the physician was using the needle for its intended purpose and in a reasonably foreseeable manner.

Even foreseeable misuse may impose a duty to warn. For example, in *LeBouef v. Goodyear Tire & Rubber Co.*,[50] plaintiff's son was fatally injured when a tire failed while he was operating his vehicle at speeds that exceeded 100 miles per hour. Although operation of the vehicle at speeds in excess of 100 miles per hour was an abuse of the product, the vehicle's design capablility to travel in excess of 100 miles per hour was a reasonably foreseeable use.[51] Since the manufacturer of the vehicle realized that the tire on the vehicle was designed for a maximum operating speed of 85 miles per hour, a warning in the owner's manual that "continuous driving over 90 miles per hour requires using high speed capability tires" was an inadequate warning. Similarly, in *Sturm, Ruger & Co. v. Day*,[52] plaintiff was sitting in the cab of a pickup truck while unloading a .41 magnum single action revolver. The gun slipped out of his hands and, when he grabbed for it, the gun fired and caused serious injuries. The Alaska Supreme Court concluded as a matter of law that dropping the pistol during unloading was clearly foreseeable.[53]

An adequate warning is essential when a particular product may be used in an unintended but reasonably foreseeable environment.[54] In *Russell v. G.A.F. Corp.*,[55] plaintiff, a carpenter, was in-

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48. *Id.* at 46-47; *accord* McCaleb v. Mackey Paint Mfg. Co., 343 So. 2d 511, 514 (Ala. 1977) (using paint thinning chemical to dip bumpers was not an intended or foreseeable use).

49. 520 S.W.2d 527 (Tex. Civ. App.—Houston [14th Dist.] 1975, no writ).

50. 451 F. Supp. 253 (W.D. La. 1978), *aff'd*, 623 F.2d 985 (5th Cir. 1980).

51. *Id.* at 257. The court noted that "[n]ormal use, however, takes on a special meaning that is synonymous with 'foreseeable use.'" *Id.* at 257.

52. 594 P.2d 38 (Alaska 1979).

53. *Id.* at 45.

54. *See, e.g.*, Moran v. Faberge, Inc., 332 A.2d 11, 20 (Md. 1975) (Faberge knowing its cologne was flammable could reasonably foresee that cologne might come close enough to

stalling sheets of corrugated asbestos cement in an interior ceiling when he stepped down upon one such sheet and the sheet shattered, causing him to fall. Plaintiff contended that the manufacturer was obligated to place a warning on each ceiling sheet that the sheet should not be walked upon. Product suppliers were aware that it was common practice within the industry to walk on the materials without the use of underlying support grids to distribute stress. Although use of the ceiling sheets as a walking surface was not intended, knowledge that the product was customarily used in this environment imposed on the supplier a duty to warn of the risk of harm attendant to that usage.[56]

In *American Laudry Machinery Industries v. Horan*,[57] plaintiff, a hot air ballonist, was injured when an industrial clothes dryer exploded. Plaintff placed his wet ballon in one bin of the dryer's spinning basket and placed an equal weight of regular laundry in the other bin. Because the ballon was made of a waterproof or non-absorbent material which retained more water than the regular laundry, an imbalance in the spinning basket was created which ultimately resulted in an explosion. The manufacturer was obligated to warn of the danger involved in not equally distributing absorbent and non-absorbent materials in the two bins of the spinning basket. Rejecting the contention that use of the product to dry large hot air ballons was a bizarre and entirely unforeseeable event the court declared: "The pertinent inquiry, in this instance, is not whether the harm that occurred—the actual use—was itself foreseeable, but rather whether it fell 'within a general field of danger which should have been anticipated.' "[58]

A warning likewise may be necessary when a component part of a product presents the potential for harm. In *Lantis v. Astec In-*

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flame to burn); Smith v. United States Gypsum Co., 612 P.2d 251, 254 (Okla. 1980) (wall adhesive ignited by an electric fan did not contain adequate warnings of its flammability); Fulbright v. Klamath Gas Co., 533 P.2d 316, 318 (Or. 1975) (manufacturer failed to warn of potato vine burner's tendency to heat up on windy days). Foreseeability includes "the probability of the occurrence of a general type of risk involving the loss, rather than the probability of the occurrence of the precise chain of events preceding the loss . . . . " Tucci v. Bossert, 385 N.Y.S. 2d 328, 331 (N.Y. App. Div. 1976).

55. 422 A.2d 989 (D.C. 1980).

56. *Id.* at 994.

57. 412 A.2d 407 (Md. Ct. Spec. App. 1980).

58. *Id.* at 413.

dustries, Inc.,[59] the court noted that a component part of an unassembled product is itself a product requiring a warning where the use is foreseeable by the manufacturer. Plaintiff's husband was fatally injured when in the course of reassembling an asphalt plant he fell through an opening in a service platform. The plaintiff urged that the components were unreasonably dangerous due to the manufacturer's failure to warn of the danger posed by the opening in the platform. The manufacturer contended that the occurrence of an injury prior to complete assembly of the product for its intended purpose precluded an action for strict tort liability. The court, however, declared that a manufacturer is required to warn of potential dangers inherent or reasonably foreseeable in the particular use of the component.[60] The manufacturer not only contemplated but intended that the assemblers of the asphalt plant would use the service platform during the reassembly process. Similarly, in *Shanks v. A.F.E. Industries, Inc.*,[61] the failure of a component manufacturer to warn of dangers presented by installation of a component into a larger product rendered the component unreasonably dangerous.[62] This general rule is subject to the limitation that the manufacturer contemplate or reasonably foresee that the component will be utilized in a particular manner or in a reasonably foreseeable environment.[63]

The product supplier, while under no duty to warn of unforeseeable misuses of a product, may be required to warn of the dangers inherent in reasonably foreseeable product misuse. The manufacturer is obligated to anticipate the environment in which the product will be used and to give notice of the potential risks arising from use in the foreseeable environment. The "environmental approach" was utilized in *Conder v. Hull Lift Truck, Inc.*,[64] to impose upon the manufacturer a duty to warn of the hazards associated with the misadjustment of the governor—carburetor linkage

59. 648 F.2d 1118 (7th Cir. 1981).

60. *Id.* at 1121.

61. 403 N.E.2d 849 (Ind. Ct. App. 1980).

62. *Id.* at 856.

63. Foreseeable environment, like foreseeable use of the product, determines the manufacturer's duty to warn of potential damages and instruct in the safe use of the product. *See, e.g.*, Russell v. G.A.F. Corp., 422 A.2d 989, 994 (D.C. 1980); Fiorentino v. A.E. Staley Mfg. Co., 416 N.E.2d 998, 1002-03 (Mass. Ct. App. 1981); Shop Rite Foods, Inc. v. Upjohn Co., 619 S.W.2d 574, 578 (Tex. Civ. App.—Amarillo 1981, writ ref'd n.r.e).

64. 405 N.E.2d 538 (Ind. Ct. App. 1980).

of a forklift truck. Plaintiff was severly injured when a forklift truck he was riding acclerated out of control and overturned. A misadjustment in the governor linkage, performed by a third party who serviced and maintained the truck, caused the vehicle to accelerate out of control instead of decreasing the vehicle's speed. Since the misadjustment was foreseeable by the manufacturer, the product was defective in the absence of a warning that misadjustment of the governor linkage could result in uncontrolled acceleration. The court reasoned:

> The environmental approach to product use assumes a manufacturer markets a product for an intended use. This is not to say, however, that in considering . . . various instructions and warnings, a manufacturer may simply close his eyes to hazards associated with foreseeable misuse of the product . . . . When product misuse and its attendant risks is reasonably foreseeable, the manufacturer is in the best position to avoid product related injuries . . . . [65]

The duty to warn against the risks of harm from foreseeable improper use or misuse of a product is imposed because of the social economic rationale underlying the entire concept of strict tort liability. This does not mean, however, that any misuse or environment of use compels a warning.

Only misuses that are commonly associated with and known about a product require a warning or direction for safe use. Otherwise, the manufacturer is relegated to the role of an insurer.

3. Unusual Susceptibility of Harm in Use of a Product

Notwithstanding that a product may be used without risk of harm by the majority of foreseeable users, the fact that even a small group or class possesses an unusual susceptibility or idiosyncratic allergic reaction to a product may precipitate the necessity for a warning. In *Crocker v. Winthrop Laboratories*,[66] the Texas Supreme Court observed that an appropriate warning of adverse reactions to patients possessing an idiosyncratic reaction to the drug Talwin was imperative.[67] The duty to warn was imposed even

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65. *Id.* at 546.

66. 514 S.W.2d 429 (Tex. 1974).

67. *Id.* at 432. In Tomer v. American Home Prods. Corp., 368 A.2d 35 (Conn. 1976), the court held the manufacturer of the anesthetic Halothane liable for breach of the duty to warn users manifesting a hypersensitive reaction even though anesthetic did not tend to

though plaintiff was one of only a small group of people who possessed an unusual sensitivity to the drug Talwin. The same principle applies when the circumstances under which a product is dangerous may be very limited when compared to the total number of uses of the product.[68]

The recent trend has either expressly rejected or simply ignored the provision articulated in section 402A that a manufacturer is obligated to warn of dangers only when a substantial number of the general population is allergic and the seller has reason to foresee the danger.[69] The rationale for imposing a duty to warn on the product supplier undoubtedly is prompted by the fact that it is the condition of the product and not the conduct of the supplier that determines liability. Even if but a few are subjected to potential significant hazards and dangers that are foreseeable, the product supplier is obligated to furnish an appropriate warning of the risk or danger posed by the product.

4. Unavoidably Unsafe Products

Certain products present dangers that are incapable of being eliminated. These products are unavoidably unsafe even though made in the manner intended, contain no impurities, and are marketed in the condition planned. These products can be justifiably manufactured, notwithstanding the risk involved, because of their benefits to society and because the alternative to marketing the product is significantly worse than the risk of harm. As noted in the commentary to Section 402A of the Restatement, "such a product, properly prepared, and accompanied by proper directions and warning, is not defective, nor is it unreasonably dangerous."[70]

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produce a reaction in an appreciable number of people. *Id.* at 40. Similarly, in Basko v. Sterling Drug, Inc., 416 F.2d 417 (2d Cir. 1969), the manufacturer was deemed obligated to warn that a drug might produce an adverse side effect in only a small number of hypersensitive users possessing an idiosyncratic reaction to the drug. *Id.* at 430.

68. *See* Davis v. Wyeth Laboratories, Inc., 399 F.2d 121, 129 (9th Cir. 1968); John Norton Farms v. Todagco, 177 Cal. Rptr. 215, 228 (Ct. App. 1981).

69. *See* Robbins v. Alberto-Culver Co., 499 P.2d 1080, 1086 (Kan. 1972) (two complaints per million bottles presented jury issue whether product supplier could reasonably foresee that number of people might sustain harm); Erny v. Revlon, Inc., 459 S.W.2d 261, 264 (Mo. 1970) (danger of side effect to one person in 50,000 was sufficient to require supplier to provide warning of risk).

70. RESTATEMENT (SECOND) OF TORTS § 402A comment k (1965); *see also* Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1981); Lindsay v. Ortho Pharma-

Thus, a manufacturer will not be strictly liable in tort for the unfortunate consequences attending the use of the unavoidably unsafe product provided the product carries an adequate warning.

Most "unavoidably unsafe" products involve drugs. A drug marketed with sufficient warning of its possible adverse effects will not impose liability against the manufacturer.[71] In determining whether a drug or similar product is unavoidably unsafe within the contemplation of the Restatement, the court must, in the first instance, determine whether marketing the product under any circumstances renders it unreasonably dangerous per se.[72] A determination that a particular product is unreasonably dangerous per se is warranted only when the harmful effects of the product both qualitatively and quantitatively outweight the beneficial effects in making the product available to the public.[73] If the court concludes

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ceutical Corp., 637 F.2d 87, 90 (2d Cir. 1980); Crocker v. Winthrop Laboratories, 514 S.W.2d 429, 432 (Tex. 1974).

71. *See, e.g.*, Werner v. Upjohn Co., 628 F.2d 848, 858 (4th Cir. 1980) (accompanied by warning information, the antibiotic Cleocin was not unreasonably dangerous); Dunkin v. Syntax Laboratories, Inc., 443 F. Supp. 121, 124 (W.D. Tenn. 1977) (manufacturer of oral contraceptive Norinyl 1 + 80 satisfied duty to warn of possible side effect of stroke by providing warnings in package inserts and leaflets in each package); McDaniel v. McNeil Laboratories, Inc., 241 N.W.2d 822, 828 (Neb. 1976) (anesthetic drug Innovar, if properly prepared and accompanied by proper warnings and instructions, was not unreasonably dangerous). Where, however, the warnings are insufficient to convey the risk of harm from possible side effects, the drug manufacturer may be strictly liable for an inadequate warning. *See, e.g.*, Davis v. Wyeth Laboratories, Inc., 399 F.2d 121, 131 (9th Cir. 1968) (polio vaccine manufacturer's lack of adequate warning of potential danger of polio); Tomer v. American Home Prods. Corp., 368 A.2d 35, 39 (Conn. 1976) (warning required of potential adverse reactions caused by anesthetic Halothane); Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978) (adequate warnings required of side effects of antibiotics neomclin and Kantrex in irrigating surgical wounds).

72. *See* Needham v. White Laboratories, Inc., 639 F.2d 394, 400 (7th Cir. 1981); *see also* Keeton, *Product Liability and The Meaning of Defect*, 5 ST. MARY'S L.J. 30, 37-38 (1973); Keeton, *Products Liability—Inadequacy Of Information*, 48 TEXAS L. REV. 398, 406 (1970).

73. As noted by the court in Brochu v. Ortho Pharmaceutical Corp., 642 F.2d 652 (1st Cir. 1981):

> [i]f the product is not unreasonably dangerous per se, the court then inquires if the product is 'unreasonably dangerous as marketed.' According to the *Reyes* opinion [498 F.2d 1264 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974)], under section 402A and comment k of the Restatement, a 'seller who has reason to believe that danger may result from a particular use of his product' must provide an adequate warning. Failure to warn in such circumstances constitutes a defect in the product, making it unreasonably dangerous as marketed.

Id. at 657; *see also* Needham v. White Laboratories, Inc., 639 F.2d 394, 400 (7th Cir. 1981); Borel v. Fibreboard Paper Prods. Co., 493 F.2d 1076, 1088-89 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974).

that the product is not unreasonably dangerous per se, then, in effect, the product is unavoidably unsafe and may be marketed provided the supplier furnishes an adequate warning of the risk of harm involved in its use.[74] The failure to provide an adequate warning of the risk of harm even for an unavoidably unsafe product renders such product unreasonably dangerous and subjects the product supplier to strict tort liability.[75]

An adequate warning for an unavoidably unsafe product must be reasonable under the circumstances.[76] A warning that is inadequate in factual content, in the expression of material facts, or in the method by which the warning is conveyed or communicated to the ultimate user, renders the product unreasonably dangerous despite its beneficial effects to the public.[77] Conversely, a warning

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74. RESTATEMENT (SECOND) OF TORTS § 402A comment k (1965). The court in Needham v. White Laboratories, Inc., 639 F.2d 394, 401 (7th Cir. 1981) recognized a two-step analysis. "Once it is determined that the product is unavoidably unsafe and that the danger is warned against, it must be determined whether the product is so unsafe that marketing it at all is 'unreasonably dangerous per se.' In order to decide whether the product is unreasonably dangerous per se, a court must balance the utility of the product against its dangers." *Id.* at 401.

75. *See, e.g.*, Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1275 (5th Cir.) (Sabin polio vaccine was unreasonably dangerous because of the failure to provide an adequate warning despite its characterization as an unavoidably unsafe product), *cert. denied*, 419 U.S. 1096 (1974); Filler v. Rayex Corp., 435 F.2d 336, 338 (7th Cir. 1970) (baseball sunglasses that would shatter into sharp splinters when hit by baseball were unreasonably dangerous in the absence of a warning); Racer v. Johnson & Johnson [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9082 (Mo. App. 1981) (flammable surgical drape which ignited during surgery was unreasonably dangerous because of absence of warning of flammable character).

76. *See* Richards v. Upjohn Co., 625 P.2d 1192, 1195-96 (N.M. Ct. App. 1980). The court, in connection with the drug neomycin sulfate, following the earlier decision in First Nat'l Bank v. Nor-Am Agricultural Prods., Inc., 537 P.2d 682 (N.M. Ct. App. 1975) reaffirmed that an adequate warning of the dangers associated with the drug required that the warning adequately indicate the scope of danger, reasonably communicate the extent or seriousness of the harm that could result from misuse of the drug, the physical aspects of the warning must adequately alert a reasonably prudent person, a simple directive warning must indicate the consequences that might result from failure to follow it, and the means used to convey the warning must be adequate. *Id.* at 691-93; *see also* Harless v. Boyle-Midway Div. Am. Home Prods., 594 F.2d 1051, 1054 (5th Cir. 1979); Spruill v. Boyle-Midway, Inc., 308 F.2d 79, 85 (4th Cir. 1962).

77. An important factor in evaluating adequacy of warning is the clarity of the particular warning. Misleading representations of safety that accompany a warning may render a warning inadequate or insufficient. *See* Bryant v. Technical Research Co., 654 F.2d 1337, 1346 (9th Cir. 1981); American Optical Co. v. Weidenhamer, 404 N.E.2d 606, 607 (Ind. Ct. App. 1980). As stated in Pearson v. Hevi-Duty Elec., 618 S.W.2d 784, 787 (Tex. Civ. App.—Houston [1st Dist.] 1981, writ ref'd n.r.e.), the warnings must be adequate as to both form and content.

that adequately communicates the particular risk of harm in light of the scientific knowledge available to the supplier at the time of sale justifies marketing the product.

Generally, a distinction exists between the supplier of highly beneficial drugs and the supplier of drugs possessing lesser medical significance. For example, in *Calabrese v. Trenton State College,*[78] the drug company discharged its duty to warn by furnishing information concerning the possible adverse side effects of an antirabies vaccine. Significantly, the court determined that there was no duty to include in the informational data accompanying distribution of the vaccine statistical information about the remote dangers of a rabies side effects.[79] In *Gravis v. Parke-Davis & Co.,*[80] the court discussed the absence of any duty to provide a warning of side effects that might ensue from a mixture of dextrose and adrenalin used in a spinal anesthetic. In *Gaston v. Hunter,*[81] however, an investigational drug, Chymopapain, was deemed to require a warning to physician investigators. The rationale for the imposition of the duty focused on the fact that the drug was not deemed to be critically urgent to the public.[82]

Considerable controversy exists whether commercially distributed blood represents a product that invokes application of section 402A. Used for transfusion purposes, blood poses a serious danger of transferring serum hepatitis. Following the leading case of *Perlmutter v. Beth David Hospital,*[83] most jurisdictions have declined to impose liability on a blood supplier for post transfusion hepatitis. The rationale for rejecting a duty to warn is premised on the fact that dispensation of blood is more aptly characterized as a service rather than as a sale under the Restatement.[84] The decisions likewise recognize the realities of the absence of any known scientific procedure that would eliminate the impurity from blood. At present, numerous states have enacted statutes specifically ex-

78. 392 A.2d 600 (N.J. Super. Ct. App. Div. 1978).

79. *Id.* at 604.

80. 502 S.W.2d 863 (Tex. Civ. App.—Corpus Christi 1973, writ ref'd).

81. 588 P.2d 326 (Ariz. Ct. App. 1978).

82. *Id.* at 340.

83. 308 N.Y. 100, 123 N.E.2d 792 (1954). *Contra* Cunningham v. MacNeal Memorial Hosp., 266 N.E.2d 897, 899 (Ill. 1970).

84. *See* Franklin, *Tort Liability for Hepatitis: An Analysis and a Proposal,* 24 STAN. L. REV. 439, 457 (1972); Sales, *The Service-Sales Transaction: A Citadel Under Assault,* 10 ST. MARY'S L.J. 13, 28 (1978).

empting blood suppliers from liability for the transmission of hepatitis through blood serum.[85]

D. *Foreseeability of The Risk of Harm As a Predicate For a Duty to Warn*

The issue of foreseeability of harm as a prerequisite to a duty to warn constitutes the quintessential issue in a marketing case. The jurisdictions express divergent views whether foreseeability of the risk of harm at the time of marketing is a prerequisite to the imposition of strict tort liability.

The Restatement[86] as well as the overwhelming majority of jurisdictions subscribe to the principle that a manufacturer or supplier of a product is only obligated to warn of dangers that are known or reasonably foreseeable and anticipated at the time the product is placed into the stream of commerce.[87] Consequently, strict tort liability is inapplicable where the manufacturer could not have reasonably foreseen by the application of reasonably developed human skill and foresight the dangers inherent in the product or in the anticipated use of the product.[88] But where the hazard or risk of harm is known or reasonably foreseeable or discoverable, the product is unreasonably dangerous in the absence of a warning or directions for safe use.

In *Woodill v. Parke-Davis & Co.*,[89] the plaintiff sustained fetal injuries allegedly caused by the drug Petocin administered to the mother during delivery. The manufacturer contended that it did not and could not have reasonably foreseen the adverse side effect

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85. *See, e.g.*, CAL. HEALTH & SAFETY CODE § 1606 (Deering 1975); ILL. ANN. STAT. ch. 91, § 181 (Smith-Hurd Supp. 1981); TEX. REV. CIV. STAT. ANN. art. 4590-3 (Vernon 1976).

86. RESTATEMENT (SECOND) OF TORTS § 402A comment j (1965).

87. *See* Ezagui v. Dow Chem. Corp., 598 F.2d 727, 733 (2d Cir. 1979) (vaccine manufacturer's knowledge of special risk of harm attendant in normal use of vaccine was requirement for providing warning); Harrison v. Flota Mercante Grancolombiana, S. A., 577 F.2d 968, 977 (5th Cir. 1978) (foreseeability that liquid chemical isobutyl acrylate would spill on a vessel and injure longshoremen working in area); Jones v. Hittle Serv., Inc., 549 P.2d 1383, 1395 (Kan. 1976) (foreseeability that a malodorant could be scrubbed from leaking propane gas); Seley v. G.D. Searle & Co., 423 N.E.2d 831, 837 (Ohio 1981) (warnings to medical profession summarizing medical information reasonably known by manufacturers at time Ovulen-21 was prescribed would have been adequate).

88. *See, e.g.*, Lindsay v. Ortho Pharmaceutical Corp., 637 F.2d 87, 91 (2d Cir. 1980); McEwen v. Ortho Pharmaceutical Corp, 528 P.2d 522, 528 (Or. 1974); Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978).

89. 402 N.E.2d 194 (Ill. 1980).

of the drug on a fetus. The Illinois Supreme Court concluded that a cause of action was not stated under strict tort liability:

> We think that the imposition of a knowledge requirement is a proper limitation to place on a manufacturer's strict liability in tort predicated upon a failure to warn of a danger inherent in a product. We do not agree with the plaintiffs that to require knowledge to be alleged and proved is to infuse negligence principles into strict liability. Indeed, liability based upon a failure to warn adequately of dangers . . . is itself a doctrine borrowed from negligence . . . . Yet the failure-to-warn theory in strict liability has been upheld as a distinguishable doctrine from its counterpart in negligence, based on the fact that it is the inadequacy of the warning that is looked to, rather than the conduct of the particular manufacturer to establish strict liability.[90]

The foreseeability requirement was later reiterated in *Nelson v. Hydraulic Press Manufacturing Co.*,[91] The plaintiff was severely burned when a plastic injection molding machine spewed metal plastic as he was attempting to clean the machine. The basis of plaintiff's cause of action was predicated on a failure to warn of the risk or hazard in cleaning the machine and instructions for proper cleaning of the molding machine when blocked by a plastic residue. The court acknowledged the *Woodill* requirement that a manufacturer is obligated to provide a warning of dangerous conditions and risks or hazards only when the manufacturer knows or could reasonably foresee the danger or harm at the time the product is marketed.[92]

Foreseeability of risk of harm or unsafe use under the majority view is measured by information objectively available at the time the product was manufactured and sold. For example, existing medical journal articles on the toxic characteristics of a particular chemical determines the ability to perceive a hazard or danger. Whether the particular product supplier was aware of information of the existing risk or hazard at the time of marketing the product is immaterial since the determination of whether the risk that was reasonably foreseeable at the time of marketing is imputed to the

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90. *Id.* at 198.

91. 404 N.E.2d 1013 (Ill. App. Ct. 1980).

92. *Id.* at 1016. Of course, the manufacturer is deemed to possess constructive knowledge of data contained in recognized scientific journals. Allen v. Upjohn, [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9173 (Tenn. App. 1982).

supplier. But the knowledge of dangers and risks of harm is measured by the information available at the time the product is marketed. This limitation may properly be characterized as a form of state of the art similar to that applied in design defect cases. To impute knowledge to a manufacturer that could reasonably be known at the time of trial as distinguished from the time of marketing would impose absolute liability. This standard separates the duty to warn under strict tort liability from negligence.[93]

Several jurisdictions have abrogated foreseeability as a prerequisite for strict tort liability in a marketing defect case.[94] These jurisdictions have intimated that knowledge of the danger and risk of harm existing at the time of the introduction of the product into the stream of commerce should be imputed to the product supplier, whether or not the particular dangerous propensities of the product were reasonably foreseeable or anticipated when the product was marketed. As viewed by the court in *Little v. PPG Industries Inc.*,[95] "strict liability (as distinct from negligence) for a manufacturer's failure to provide adequate warnings does not depend on the manufacturer's knowledge of the danger. Such knowledge is assumed . . . ."[96] Stated somewhat differently, the imposition of strict tort liability depends upon a manufacturer's "knowledge or reasonable imputation of knowledge."[97] Under the minority ap-

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93. *See* Woodill v. Parke-Davis & Co., 402 N.E.2d 194, 199 (Ill. 1980). The court in *Woodill* noted:

> We believe our holding in this case is justified because a logical limit must be placed on the scope of a manufacturer's liability under a strict liability theory. To hold a manufacturer liable for failure to warn of a danger of which it would be impossible to know based on the present state of human knowledge would make the manufacturer the virtual insurer of the product, a position rejected by this court . . . .

Id. at 199. *See also* Allen v. Upjohn Co., [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9173 (Tenn. App. 1982). Some commentators disagree, although they fail to explain the manner in which a contrary rule would not impose an insurer status on supplier. *See* Keeton, *Products Liability—Inadequacy Of Information*, 48 TEXAS L. REV. 398, 404 (1970).

94. *See* Little v. PPG Indus., Inc., 579 P.2d 940, 946 (Wash. Ct. App. 1978), *aff'd as modified*, 594 P.2d 911 (Wash. 1979). The court stated that "the foreseeability of the dangers involved in the use of the product are not relevant to the strict tort theory, while those factors are necessary elements of proof of the manufacturer's liability for a negligent failure to warn adequately of the hazards involved in the use of the product." *Id.* at 946; *see also* Prentice v. Acme Mach. & Supply Co., 601 P.2d 1093, 1095 (Kan. 1979); Racer v. Johnson & Johnson [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9082 (Mo. App. 1981).

95. 579 P.2d 940 (Wash. 1978).

96. *Id.* at 946.

97. *See* Anderson v. Heron Eng'g Co., 604 P.2d 674, 679 (Colo. 1979). Some courts even

proach there is no limitation on the supplier's imputed knowledge as a basis for determining a duty to provide an adequate warning.[98]

The elimination of the foreseeability requirement at the time of marketing judicially metamorphasizes the product supplier into an insurer against product related accidents. The inquiry may be posed how a supplier of a product may be expected to warn of the risk inherent in the use of a product that is both unknown and technically unknowable at the time the product is marketed. In essence, must a supplier market a product only after an inordinate delay in experimentation and testing and thereby deprive the public of needed and highly valued products because there may be unknowable side effects or hazards not then reasonably known or scientifically discoverable? Ultimately, the consuming public is deprived of valuable products because of the product supplier's concern over absolute liability. The underlying rationale of the minority view appears incongruous with and rather crudely ignores the literal provisions of comment j of section 402A.

Some jurisdictions have concluded that where the defect in a product involves a failure to furnish an adequate warning or instruction for safe use the action is sustainable under section 388 of the Restatement.[99] Other jurisdictions, without analysis, perceive the theories of strict tort liability and negligence (as well as breach of implied warranty) providing essentially identical standards for the duty to warn.[100] These jurisdictions perceive that under either

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require the trial court to instruct the jury that the dangerous trait of the product is imputed to the manufacturer. In Freund v. Cellofilm Properties, Inc., 432 A.2d 925 (N.J. 1981), the New Jersey Supreme Court declared that the trial court must instruct the jury that the manufacturer is deemed to have known of the harmful propensity of the product. *Id.* at 931.

98. *See, e.g.*, Hamilton v. Hardy, 549 P.2d 1099, 1109 (Colo. Ct. App. 1976); Berkeblile v. Brantly Helicopter Corp., 337 A.2d 893, 900 (Pa. 1975); Kimble v. Waste Systems Int'l, Inc., 595 P.2d 569, 572 (Wash. Ct. App. 1979).

99. *See* Sterling Drug, Inc. v. Yarrow, 408 F.2d 978, 992-93 (8th Cir. 1969); Torsiello v. Whitehall Laboratories, 398 A.2d 132, 136-37 (N.J. Super. Ct. App. Div. 1979). As observed by the court in *Yarrow*, the two concepts are essentially identical since the effort to warn must be reasonable under the circumstances. Sterling Drug, Inc. v. Yarrow, 408 F.2d 978, 993 (8th Cir. 1969); *cf.* Freund v. Cellofilm Properties, Inc., 432 A.2d 925, 929 (N.J. 1981).

100. The courts reason that if the user establishes a right to recover under strict liability he necessarily establishes that the product supplier was negligent. *See, e.g.*, Brezendine v. Visador Co., 437 F.2d 822, 828 (9th Cir. 1970); Chambers v. G.D. Searle & Co., 441 F. Supp. 377, 380 (D. Md. 1975); Smith v. E.R. Squibb & Sons, 273 N.W.2d 476, 479 (Mich. 1979). Some jurisdictions advocate that the Restatement represents the more appropriate remedy and basis for imposing liability in a marketing case. *See* Dougherty v. Hooker Chem. Corp., 540 F.2d 174, 178 (3d Cir. 1976); Ferrigno v. Eli Lilly & Co., 420 A.2d 1305, 1317-18

theory, recovery depends on a subjective determination of what constitutes a reasonable warning.

III. Basis For a Marketing Defect

As noted earlier, the three basis component theories that support an action for a marketing defect are: (1) the failure to provide any warning of the risk or hazard associated with a product; (2) the failure to provide an adequate warning of the risk or hazard associated with a product; and (3) the failure to provide proper instructions for safe use and directions for avoiding improper use.[101]

A. Absence of Any Warning of the Risk of Harm or Danger

Compelling an appropriate warning are those dangers that are inherent in the product when used for its intended purpose, those dangers that are avoidable by taking appropriate precautions and safeguards in using the product, and lastly, those dangers that emerge only when the product is used improperly or for an unintended purpose.[102] Where the potentially dangerous propensities are within the reasonable contemplation and knowledge of the consumer or user, however, the product need not convey any warning.[103] Thus, where the risk of harm or danger posed by a product is neither hidden or latent, the absence of a warning will not render the product defective.[104]

In *Borel v. Fibreboard Paper Products Corp.*,[105] plaintiff developed mesothelioma allegedly as the result of protracted exposure to asbestos products. Evidence indicated that medical literature had established a relationship between mesothelioma and inhalation of asbestos fibers. The court concluded that the manufactur-

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(N.J. Super. Ct. Law Div. 1980).

101. *See* Keeton, *Products Liability, Inadequacy Of Information*, 48 Texas L. Rev. 398, 398-99 (1970); *see also* Hohlenkamp v. Rheem Mfg. Co., 601 P.2d 298, 300 (Ariz. Ct. App. 1979).

102. *See, e.g.*, Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1088 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974); Jonescue v. Jewel Home Shopping Serv., 306 N.E.2d 312, 316 (Ill. App. Ct. 1973); Technical Chem. Co. v. Jacobs, 480 S.W.2d 602, 605 (Tex. 1972).

103. Restatement (Second) of Torts § 402A comment j (1965).

104. *See* Osterdorf v. Brewer, 367 N.E.2d 214, 217 (Ill. App. Ct. 1977); Metal Window Prods. Co. v. Magnusen, 485 S.W.2d 355, 359 (Tex. Civ. App.—Houston [14th Dist.] 1972, writ ref'd n.r.e.).

105. 493 F.2d 1076 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974).

ers' failure to furnish any warning of the risks involved in working with asbestos products rendered the products unreasonably dangerous.[106]

Similarly, in *Racer v. Johnson & Johnson*,[107] the plaintiff, a surgical patient, was severely burned when a disposable drape used in performing D & C surgery was ignited by a cautery device. The drape was highly flammable but the manufacturer furnished no warning of this particular characteristic. Liability would result because of the absence of any warning of this dangerous propensity.[108]

It is equally clear that the absence of warning must represent a causative nexus to the injury producing event. Many product related injuries arise from the use of one product in conjunction with another. For a marketing defect to exist, it must be established that the product in question was unreasonably dangerous without a warning and that this absence of warning was a causative factor in the product user's injury.[109] In *Garman v. American Clipper Corp.*,[110] plaintiff purchased a motor home with a propane gas system. Several leaks were detected in the gas system and were taken to the dealer for repair. A few days later while at a rest stop plaintiff's wife lit the stove and within a few minutes an explosion and fire occurred. The fire and explosion were caused by ignition of gas that was leaking from a joint on a gas line extending from a nearby hot water heater. Plaintiffs contended that the defendant failed to give adequate warning and installation instructions regarding the gas stove. In affirming a summary judgment for the manufacturer, the appellate court stated:

> A failure to warn may create liability for harm caused by use of an unreasonably dangerous product. That rule, however, does not apply to the facts in this case because it was not any unreasonably dangerous condition or feature of respondent's product which caused the

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106. *Id.* at 1094.

107. [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9082 (Mo. App. 1981).

108. *Id.* ¶ 9082, at 21, 111.

109. In a failure to warn situation, a presumption arises that an adequate warning would have been read, heeded, and the injury producing event averted. *See, e.g.*, Wolfe v. Ford Motor Co., 376 N.E.2d 143, 147 (Mass. App. Ct. 1978); Ferrigno v. Eli Lilly & Co., 420 A.2d 1305, 1322 (N.J. Super. Ct. Law Div. 1980); Technical Chem. Co. v. Jacobs, 480 S.W.2d 602, 604 (Tex. 1972).

110. 173 Cal. Rptr. 20 (Cal. Ct. App. 1981).

> injury. To say that the absence of a warning to check for gas leaks in other products makes the stove defective is semantic nonsense. The product here did not cause or create the risk of harm.[111]

This identical rationale was followed in *Johnson v. Jones-Blair Paint Co.*[112] Plaintiffs sustained burn injuries while removing dried paint from the floor with gasoline. The gas fumes came in contact with an open flame of a pilot light and an explosion occurred. Plaintiffs alleged the manufacturer failed to warn that cleaning dried paint spots with gasoline was dangerous. The court noted that paint was not an unreasonably dangerous product and did not need to carry a warning. Moreover, the court observed that it was not the dried paint spots but the gasoline that exploded, thus recognizing the absence of a causative nexus to plaintiffs' injuries.[113]

In the absence of any warning, a presumption is created that the ultimate user would have read and heeded an adequate warning.[114] That presumption, however, does not impose absolute liability but the burden of going forward with the evidence is simply shifted to the product supplier.[115] Once evidence is introduced that an adequate warning would not have averted the injury-producing event, the presumption disappears. For example, evidence of user incapacity such as blindness, illiteracy, intoxication at the time of use, irresponsibility or lack of judgment rebuts the presumption.[116] In the absence of a presumption, the courts have placed the responsibility to demonstrate that, had a warning been provided, it would have been considered and heeded. As an example, *Greiner v. Volkswagenwerk Aktiengesellschaft*[117] involved the failure to warn of the propensity of the particular vehicle to overturn in a sharp steering maneuver. The plaintiff was required to establish that he would not have purchased the vehicle in the face of the warning. In *Cunningham v. Charles Pfizer & Co.*,[118] a 15-year-old child con-

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111. *Id.* at 22 (citations omitted).

112. 607 S.W.2d 305 (Tex. Civ. App.—Eastland 1980, writ ref'd n.r.e.).

113. *Id.* at 306.

114. *See, e.g.*, Wolfe v. Ford Motor Co., 376 N.E.2d 143, 147 (Mass. App. Ct. 1978); Rawlings Sporting Goods Co. v. Daniels, 619 S.W.2d 435, 439 (Tex. Civ. App.—Waco 1981, writ ref'd n.r.e.); Menard v. Newhall, 373 A.2d 505, 506 (Vt. 1977).

115. Menard v. Newhall, 373 A.2d 505, 506 (Vt. 1977).

116. Technical Chem. Co. v. Jacobs, 480 S.W.2d 602, 606 (Tex. 1972).

117. 429 F. Supp. 495 (E.D. Pa. 1977).

118. 532 P.2d 1377 (Okla. 1974).

tracted polio after taking "Type I" vaccine. The court acknowledged that the plaintiff intended to take the vaccine notwithstanding knowledge of the danger that would have been communicated by a warning of the potential side effects of the vaccine. The court in *Salk v. Alpine Ski Shop, Inc.*,[119] emphasized that the plaintiff was obligated to establish that he would not have skied or that he would have purchased other types of ski bindings had he been warned of the propensity of the particular ski bindings not to release.

B. Inadequacy of Existing Warning

The vast majority of marketing defect cases involve the adequacy of an existing product warning rather than the total absence of any warning. Either a diluted or an overly broad warning of danger exists but in either case the warning fails to focus on the precise risk of harm involved in the injury-producing event.

A failure to warn adequately of the particular risk of harm may render a product, otherwise free of defects, unreasonably dangerous within the intendment of strict tort liability.[120] The ultimate user must be afforded a fair opportunity to make an informed choice whether the risk of harm or danger posed by a product outweighs the utility of using the product. This is the rationale that underlies the entire concept of a marketing defect.

Adequacy must be determined from the facts. In *Caplaco One, Inc. v. Amerex Corp.*,[121] a fire extinguisher failed to operate and extinguish a fire in an apartment building. The maintenance man had failed to check a pressure gauge on the extinguisher. Embossed on the extinguisher was the warning, in addition to a pressure gauge, "Recharge Immediately After Use." This was deemed a clear descriptive warning of the danger posed by an underpres-

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119. 342 A.2d 622 (R.I. 1975). Moreover, a lack of warning is not the proximate cause of an injury if the user is aware of the danger which a warning would provide. Strong v. E.I. Du Pont De Nemours Co., 667 F.2d 682, 687 (8th Cir. 1981).

120. *See* Skyhook Corp. v. Jasper, 560 P.2d 934, 938 (N.M. 1977); Bituminous Casualty Corp. v. Black & Decker Mfg. Co., 518 S.W.2d 868, 872-73 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.). In Palmer v. Avco Dist. Co., 412 N.E.2d 959 (Ill. 1980) a warning plate which warned users to keep feet and hands away from power driven parts of a fertilizer spreader was deemed inadequate. Understandably, the court did not declare the contents of an adequate warning. *Id.* at 962.

121. 572 F.2d 634 (8th Cir. 1978).

surized extinguisher that had previously been used.[122]

In general, an adequate warning must communicate with such a degree of intensity that would cause a reasonable person to exercise for his own safety the caution commensurate with the potential danger.[123] As articulated in *Lopez v. ARO Corp.*,[124] "whether a warning is legally sufficient depends upon the language used and the impression that such language is calculated to make upon the minds of the users of the product."[125] Evidence that the user of the product followed the warnings or instructions but, nevertheless, sustained an injury constitutes some evidence that the warning or instruction was inadequate to make the product reasonably safe.[126] Adequacy likewise depends on warning of the risk of improper use or handling of the product. For example, the failure to warn an ultimate user of the risk of two workers rather than just a single worker operating a bail cutting machine presents an issue on adequacy.[127]

Adequacy of a particular warning or instruction for safe use depends on communicating to the ultimate user the particular danger or risk of harm involved in the use of a product. An adequate warning is generally measured by a dual standard: (1) Is the warning calculated to reach the user of the product in a form that would reasonably be expected to catch the attention of a prudent person in the circumstances or environment of its use; and (2) Is the warning comprehensible to the average user and does it convey

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122. *Id.* at 636.

123. *See* Bituminous Casualty Corp. v. Black & Decker Mfg. Co., 518 S.W.2d 866, 872 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.). An adequate warning is one that is calculated to bring home to a reasonably prudent user the nature and extent of the danger involved in the use of the product. *See, e.g.*, Haberly v. Reardon Co., 310 S.W.2d 859, 867 (Mo. 1958); Richards v. Upjohn Co., 625 P.2d 1192, 1196 (N.M. Ct. App. 1980); Trimble v. Irwin, 441 S.W.2d 818, 822 (Tenn. Ct. App. 1968).

124. 584 S.W.2d 333 (Tex. Civ. App.—San Antonio 1979, writ ref'd n.r.e.).

125. *Id.* at 335; *accord* Harless v. Boyle-Midway Div. Am. Home Prods., 594 F.2d 1051, 1054 (5th Cir. 1979); Young v. Reliance Elec. Co., 584 S.W.2d 663, 668 (Tenn. App. 1979). As noted by the court in Selly v. G.D. Searle & Co., 423 N.E.2d 831 (Ohio 1981), "adequacy of such warnings is measured not only by what is stated but also by the manner in which it is stated." *Id.* at 837.

126. *See* Kritser v. Beach Aircraft Corp., 479 F.2d 1089, 1096 (5th Cir. 1973) (pilot following instructions contained in operators manual and still experienced an accident).

127. *See* Reid v. Spadone Mach. Co., 404 A.2d 1094, 1098 (N.H. 1979). In Marchant v. Lorain Div. of Koehring, 251 S.E.2d 189 (S.C. 1979) the issue of whether the crane operator was aware of the tendency of the crane to double block raised an issue on adequacy of the warning. *Id.* at 192.

a fair indication of the nature and extent of the danger to the mind of a reasonably prudent person?[128] Implicit in this determination is an evaluation of the clarity with which the particular danger or risk of harm is communicated to the expected user of the product.[129] An adequate warning, in essence, must bring home to the user the specific danger or risk of harm involved in the use of the product.[130]

There are instances where adequacy of warning is determined as a matter of law. As an example, there is no duty on the supplier of blasting caps to warn of the danger of a spontaneous explosion of a cap after 30 years of unsupervised storage.[131] In these circumstances, the imposition of a duty to furnish full and complete warnings would be tantamount to the imposition of absolute liability.[132] The fact that strict liability was never intended to be absolute nor to impose the status of insurer upon the product manufacturer was seemingly ignored under the novel approach followed in *Sturm, Ruger & Co. v. Day.*[133] Plaintiff dropped the revolver he was unloading in the cab of his pickup truck, causing the gun to fire and a bullet to strike his leg. The manufacturer had provided a printed warning in the instruction booklet accompanying the gun which the Alaska Supreme Court acknowledged as sufficient to alert consumers of the hidden dangers in the use of the revolver. The court, however, reasoned that the warning would not protect the inadvertent plaintiff who accidentally dropped the gun:

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128. *See, e.g.*, Shop Rite Foods, Inc., v. Upjohn Co., 619 S.W.2d 574, 578 (Tex. Civ. App.—Amarillo 1981, no writ); Lopez v. ARO Corp., 584 S.W.2d 333, 336 (Tex. Civ. App.—San Antonio 1979, writ ref'd n.r.e.); Bituminous Casualty Co. v. Black & Decker Mfg. Co., 518 S.W.2d 868, 872-73 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.).

129. *See, e.g.*, Bryant v. Technical Research Co., 654 F.2d 1337, 1345-46 (9th Cir. 1981); Borchu v. Ortho Pharmaceutical Corp., 642 F.2d 652, 657 (1st Cir. 1981); Fiorentino v. A.E. Staley Mfg. Co., 416 N.E.2d 998, 1003 (Mass. App. Ct. 1980).

130. *See* Richards v. Upjohn Co., 625 P.2d 1192, 1196 (N.M. Ct. App. 1980). In Murray v. Wilson Oak Flooring Co., 475 F.2d 129 (7th Cir. 1973) the warning on the can that adhesive should not be used "near" fire or flame was deemed inadequate to communicate that vapors from an adhesive could be ignited by an open pilot light. *Id.* at 132-33. Additionally, in Tucson Indus., Inc., v. Schwartz, 501 P.2d 936 (Ariz. 1972) the warning on contact cement was inadequate to alert users that fumes from the cement could potentially produce blindness. *Id.* at 941. A warning that is delayed, reluctant in tone or lacking in a sense of urgency may be inadequate. *See* Seley v. G.D. Searle & Co., 423 N.E.2d 831, 837 (Ohio 1981).

131. Barrett v. Atlas Powder Co., 150 Cal. Rptr. 339, 343 (Cal. Ct. App. 1978).

132. *Id.* at 343.

133. 594 P.2d 38 (Alaska 1979).

> Where the most stringent warning does not protect the public, the defect itself must be eliminated if the manufacturer is to avoid liability . . . . Although in certain cases an adequate warning may prevent a product from being deemed defective, the instant case was not of that type.[134]

In essence, the product was adjudged to be unreasonably dangerous per se. This decision in effect imposes a form of absolute liability on the manufacturer.

A presumption is created when an adequate warning has been supplied with the product that the user will heed and comply with reasonable warnings.[135] A product supplier is entitled to rely on the ultimate user reading and following adequate warnings that accompany a product. Even when an inadequate warning exists, it nonetheless cannot proximately cause an injury when the user fails to read or heed the warning or directions for use.[136] It is axiomatic that the lack of a satisfactory communication of the risk of danger or hazard must present a causative nexus to the injury-producing event.

C. Lack of Directions or Instructions for Safe and Effective Use

Mere directions for the proper use of the product which fail to warn of specific dangers and risks of harm if the directions are not followed may not satisfy this marketing requirement.[137] Conversely, the mere fact that the ultimate user is apprised of a poten-

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134. *Id.* at 44.

135. RESTATEMENT (SECOND) OF TORTS § 402A comment j (1965). In Hudgens v. Interstate Battery Sys. of Am., Inc., 393 So. 2d 940, 944 (La. Ct. App. 1981), the court determined that automotive battery warning was adequate as a matter of law and stated "If plaintiff had obeyed the warning this unfortunate accident would not have occurred." *Id.* at 944. *See generally* Reeves v. Power Tools, Inc., 474 F.2d 375, 379 (6th Cir. 1973); Caplaco One, Inc. v. Amerex Corp., 435 F. Supp. 1116, 1119 (E.D. Mo. 1977), *aff'd*, 572 F.2d 634 (8th Cir. 1978); Young v. Reliance Elec. Co., 584 S.W.2d 663, 669 (Tenn. Ct. App. 1979).

136. *See* Cobb Heating & Air Conditioning Co. v. Hertron Chem. Co., 229 S.E.2d 681, 683 (Ga. Ct. App. 1976); Technical Chem. Co. v. Jacobs, 480 S.W.2d 602, 605 (Tex. 1972). *But see* Spruill v. Boyle-Midway, Inc., 308 F.2d 79, 87 (4th Cir. 1962) (failure to read warning accompanying Old English Oil Furniture Polish could not insulate manufacturer from liability under Virginia negligence law where warning deemed inadequate).

137. *See* Bituminous Casualty Corp. v. Black & Decker Mfg. Co., 518 S.W.2d 868, 873 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.) (instructions to use protective shield on a high speed grinder is inadequate to warn the user of the danger in failing to follow directions for use).

tial risk of harm in the use of a product may not enable the user to avoid that risk in the absence of directions or instructions for properly and safely utilizing the product.

Directions for use serve purposes distinct from warnings. Directions basically instruct the user of the product in the proper and efficient use of the product and the proper manner to avoid unsafe uses while warnings communicate the dangers inherent in the use of the product.[138] Stated differently, warnings focus on avoiding unsafe use while instructions seek to insure safe and appropriate use.[139]

Mere direction for use may or may not satisfy the duty to warn. As noted in *Harris v. Northwest Gas Co.*,[140] "[t]he distinction between instructions and warnings become important when instructions alone are given and the issue is whether warnings are also required for safe use."[141] In *Schmidt v. Plains Electric, Inc.*,[142] the manufacturer's instruction booklet accompanying its electric wallheater furnished information that to obtain maximum efficiency and economy of operation it was important not to block the air inlet or outlet. Such instructions, however, pertained merely to attaining optimum operation of the product and failed to warn of the potential fire hazard created in installing the heater behind fabric drapes.[143]

A manufacturer may additionally be required to furnish a warning concerning the potential risk of harm in the event the instructions or directions accompanying the product are disregarded. As stated by the court in *Hiigel v. General Motors Corp.*,[144] "We

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138. *Id.* at 873; *see also* D'Arienzo v. Clairol, Inc., 310 A.2d 106, 110 (N.J. Super. Law Div. 1973) (duty to warn not discharged by mere presence of directions for use no matter how clear). For a general discussion of the distinction, see Dillard & Hart, *Product Liability: Directions For Use And The Duty To Warn*, 41 VA. L. REV. 145, 172-73 (1955).

139. *See* Harris v. Northwest Natural Gas Co., 588 P.2d 18, 20 n.3 (Or. 1978).

140. 588 P.2d 18 (Or. 1978).

141. *Id.* at 20 n.3; *see also* Lopez v. ARO Corp., 584 S.W.2d 333, 336 (Tex. Civ. App.—San Antonio 1979, writ ref'd n.r.e.). The court in *Lopez* noted that the statement "[w]hen used as a grinder: 'The tool should never be operated with the guard removed,' could reasonably be considered a warning of the danger of using the tool as a grinder without a guard rather than merely a direction for its use." *Id.* at 336. *See generally* Fiorentino v. A.E. Staley Mfg. Co., 416 N.E.2d 998, 1002-03 (Mass. App. Ct. 1981); Wolfe v. Ford Motor Co., 376 N.E.2d 143, 145-46 (Mass. App. Ct. 1978).

142. 281 N.W.2d 794 (N.D. 1979).

143. *Id.* at 799-800.

144. 544 P.2d 983 (Colo. 1975).

think that the duty to warn may not be satisfied by directions which merely tell how to use the product, but say nothing about the inherent and specific dangers if the directions are not followed."[145]

In *Anderson v. Heron Engineering Co.*,[146] a ski instructor fell thirty feet to the ground and was injured when the cable clamp unit securing his chair to the chair lift failed. Despite the fact that the manufacturer had supplied a maintenance manual to the lift operator containing instructions for the proper torque to be applied to the clamp unit, the manufacturer was deemed liable for failing to warn of the consequences that would result from noncompliance.[147]

In *Kerns v. Engelke*,[148] plaintiff was struck in the eye while assisting in setting up a longhopper forage blower, which is powered by a power take-off assembly (PTO) attached at one end to the forage blower, and, at the other end, to the power take off of a tractor. The PTO must be disconnected from the tractor whenever the forage blower is moved, but need not be removed from the forage blower. An instruction manual accompanying the forage blower contained pictures entitled "Method of Transport," depicting the forage blower with its PTO removed. Rejecting the assertion that the pictures conveyed an adequate warning (based on the adage "one picture is worth a thousand words"), the court stated, "[a]t most, however, the pictures merely informed the reader of the manual that the PTO could be removed, not that failure to do so was dangerous."[149]

Similarily, in *Anderson v. Klix Chemical Co.*,[150] directions on the label to dilute a cleaning solution were insufficient to warn of the dangers that would result in the event the user failed to dilute the solution as specified. Additionally, in *Hiigel v. General Motors Corp.*,[151] an instruction calling for the tightening of lug nuts on a

145. *Id.* at 988.

146. 604 P.2d 674 (Colo. 1979).

147. *Id.* at 679.

148. 369 N.E.2d 1284 (Ill. App. Ct. 1977), *aff'd as modified*, 390 N.E.2d 859 (Ill. 1979).

149. *Id.* at 1291.

150. 472 P.2d 806 (Or. 1970); *accord* Brizendine v. Visador Co., 437 F.2d 822, 828 (9th Cir. 1970).

151. 544 P.2d 983 (Colo. 1975). But in Ford Motor Co. v. McCamish, 559 S.W.2d 507 (Ky. Ct. App. 1977), the court declared that the manufacturer was not required to give torque ratings on wheel bolts to individuals experienced in tire assembly and the mounting

wheel assembly to specified foot pounds of torque did not provide an appropriate warning of the hazard that would occur in the event the instructions were ignored. A product supplier is not obligated to include directions in its service manual of the torque rating for bolts where the danger to person reasonably expected to perform this type of repair was unforeseeable by the manufacturer.[152]

Instructions for safe operation and use of a product are likewise essential where hazards may arise from an improper but reasonably foreseeable use of the product.[153] This requirement is especially pertinent and essential for technically complex products. In *Midgley v. S.S. Kresge Co.*,[154] the court acknowledged the applicability of strict tort liability against the supplier of a toy telescope purchased on behalf of a minor child who suffered eye injuries while using the improperly assembled product to view the sun. The court noted that the product was "a technically complex product intended for use by technically unsophisticated consumers, to be assembled and used by them in accordance with instructions prepared and supplied by the technically knowledgeable supplier."[155] The court concluded that the supplier should know that the instructions furnished would form the unsophisticated consumers' only guide to assembly and proper use of the telescope. Consequently, the supplier was obligated to compose and furnish a set of directions and instructions that would adequately guide the ultimate user from the pitfall of the danger of improper construction.[156]

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of vehicle tires in the automotive field. *Id.* at 511-12.

152. *See* Ford Motor Co. v. McCamish, 559 S.W.2d 507, 511-12 (Ky. Ct. App. 1977).

153. *See* Technical Chem. Co. v. Jacobs, 480 S.W.2d 602, 604 (Tex. 1972) (danger from connecting freon can to the high pressure side of an air conditioning compressor); Bituminous Casualty Corp. v. Black & Decker Mfg. Co., 518 S.W.2d 868, 873 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.) (danger in failing to use a safety on a cuprock grinding wheel).

154. 127 Cal. Rptr. 217 (Cal. Ct. App. 1976). In Hiigel v. General Motors Corp., 544 P.2d 983 (Colo. 1975), the court emphasized that instructions prescribing proper maintenance of a motor home did not necessarily satisfy the duty to warn of the danger in the event of the failure of such maintenance. *Id.* at 988.

155. Migley v. S.S. Kresge Co., 127 Cal. Rptr. 217, 221 (Cal. Ct. App. 1976). The court noted that "it begs the obvious to say that the supplier knows or reasonably should know that the directions furnished by him will form the unsophisticated consumer's only guide to assembly and use." *Id.* at 221.

156. *Id.* at 221.

Instructions for safe handling may even be necessary to those experienced in the normal use or handling of a product. In *Frazier v. Kysor Industrial Corp.*,[157] plaintiff, an expert in the moving of heavy equipment, was injured while moving a four ton transverse saw. The manufacturer was held liable for the failure to provide instructions for the safe and proper method of moving the saw. This duty, therefore, is not satisfied by furnishing warning of dangers inherent only in the intended uses of a product.[158] The warnings must anticipate foreseeable handling, moving and installation of equipment and products. This constitutes but an obvious recognition of the need to warn and furnish instructions for a product in its various foreseeable environments.

IV. Prerequisites of an Adequate Warning or Instruction for Safe Use

A. *In General*

The essential elements of a legally adequate warning or instruction for safe use were clearly articulated by the court in *Bituminous Casualty Corp. v. Black & Decker Manufacturing Co.*[159] An adequate warning or instruction is one that (1) would reasonably be expected to catch the attention of a reasonably prudent person in the circumstances of its use and (2) would be understandable in content and convey a fair indication of the nature and extent of the danger to the reasonably prudent person. The sufficiency of a warning is dependent upon both the language used and the impression that the language is calculated to make upon the mind of the average user of the product.[160]

The adequacy of a warning or an instruction for safe use generally constitutes a fact issue that must be resolved by the trier of fact.[161] This general rule was reaffirmed in *Bryant v. Technical Re-*

157. 607 P.2d 1296 (Colo. Ct. App. 1979).

158. Rawlings v. D.M. Oliver, Inc., 159 Cal. Rptr. 119, 121 (Cal. Ct. App. 1979).

159. 518 S.W.2d 868 (Tex. Civ. App.—Dallas 1974, writ ref'd n.r.e.).

160. *Id.* at 872-73; *accord* Harless v. Boyle- Midway Div. Am. Home Prods., 594 F.2d 1051, 1054 (5th Cir. 1979); Michael v. Warner/Chilicott, 579 P.2d 183, 187 (N.M. Ct. App. 1978); Shop Rite Foods, Inc. v. Upjohn Co., 619 S.W.2d 574, 578 (Tex. Civ. App.—Amarillo 1981, writ ref'd n.r.e.).

161. *See* Berry v. Coleman Sys. Co., 596 P.2d 1365, 1369 (Wash. Ct. App. 1979). The court declared, "the trial court may rule as a matter of law that warnings are inadequate

search Co.[162] In reviewing a summary judgment in favor of the manufacturer, the Ninth Circuit emphasized that the summary judgment procedure is ordinarily improper to dispose of the issue of warning adequacy. Rather, because of the unique circumstances of each case, warning adequacy is best reserved for determination by the jury.[163]

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when, and only when, the danger is clearly latent. In all other cases, the adequacy of both the content and prominence of warnings accompanying a product is a question for the jury and the court need not furnish guidelines to aid the jury in its determination." *Id.* at 1369; *see, e.g.*, Brownlee v. Louisville Varnish Co., 641 F.2d 397, 400 (5th Cir. 1981) (fact issue whether warning affixed to aerosal paint can was adequate in the absence of instructions for safe disposal of the product); Stapleton v. Kawasaki Heavy Indus., Ltd., 608 F.2d 571, 573 (5th Cir. 1979) (adequacy of warning of potential fuel leakage which was published in ordinary print and contained on page 13 of owner's manual presented an issue for the jury); Lopez v. ARO Corp., 584 S.W.2d 333, 336 (Tex. Civ. App.—San Antonio 1979, writ ref'd n.r.e.) (warning given in an operator's manual that accompanied product presented fact issue for jury in determining adequacy of warning). The rule that the adequacy of a warning presents a fact issue is followed in several jurisdictions. *See* Dougherty v. Hooker Chem. Corp., 540 F.2d 174, 179 (3d Cir. 1976) (fact issue was presented where warnings affixed both to 55 gallon drum and contained in safety data sheets conveyed sufficient warnings of dangerous propensities of trichloroethylene when used to clean and degrease helicopter parts); LeBouef v. Goodyear Tire & Rubber Co., 451 F. Supp. 253, 257 (W.D. La. 1978) (warning by manufacturer of vehicle that "continuous driving over 90 miles per hour requires using high-speed-capability tires" was inadequate where manufacturer knew that tires were designed for maximum operating speed of 85 miles per hour), *aff'd*, 623 F.2d 985 (5th Cir. 1980); Sabich v. Outboard Marine Corp., 131 Cal. Rptr. 703, 708 (Cal. Ct. App. 1976) (warnings printed on dashboard of "trackster" was insufficient to inform the user of serious likelihood of overturning forward because of vehicles' weight distribution); Ebbert v. Vulcan Iron Works, Inc., 409 N.E.2d 112, 113 (Ill. App. Ct. 1980) (whether warning in field manual accompanying pile drive was sufficient to warn of potential danger from possible disconnection of air hose or whether warning was required affixed to machine itself presented jury question); Wolfe v. Ford Motor Co., 376 N.E.2d 143, 146 (Mass. App. Ct. 1978) (fact issue was raised where information that was printed in owner's manual and furnished with vehicle on rating plate affixed to door provided adequate instruction and warning that gross vehicle weight and weight requirements posed a danger when used as portable camper); First Nat'l Bank v. Nor-Am Agricultural Prods., Inc.,537 P.2d 682, 691 (N.M. Ct. App. 1975) (fact question was presented whether warning on tag and label accompanying liquid sold for disinfectant was adequate to warn of the danger of human consumption of hogs fed grain treated with the disinfectant); Spencer v. Nelson Sales Co., 620 P.2d 477, 482 (Okla. Ct. App. 1980) (fact issue whether insulated underwear unreasonably dangerous absent label warning as to its extreme flammability); Reiger v. Toby Enters., 609 P.2d 402, 404 (Or. Ct. App. 1980) (a fact issue existed concerning the adequacy of warning placard placed on meat slicer).

162. 654 F.2d 1337 (9th Cir. 1981).

163. *Id.* at 1344-45. The Ninth Circuit stressed that adequacy is rarely a subject for summary judgment, but rather generally constitutes an issue to be resolved by a jury. *Id.* at 1344-45; *accord* Palmer v. Avco Distrib. Corp., 412 N.E.2d 959, 964 (Ill. 1980); Richards v. Upjohn Co., 625 P.2d 1192, 1196 (N.M. Ct. App. 1980); Reiger v. Toby Enters., 609 P.2d

B. Factors that Establish Adequacy

There are several important considerations that directly affect the adequacy of a warning or instruction for safe use. These considerations include the conspicuousness of the warning or instruction on the product, the size and type of print used to communicate the warning or instruction, the location of the warning or instruction on the product, the manner in which the warning or instruction is affixed to the product, and the manner in which the warning and directions for use are communicated to the ultimate user.

1. Conspicuousness of the Warning

The warning or instruction must be prominent. Cautionary words printed in the body of other information of the same size and color generally are insufficient.[164] Rather, the warning must be printed on the label in such a manner as to assure that a user's attention will be attracted.[165] The design of the product itself may constitute the warning. For example, a shield over a starter switch may constitute a warning of the danger of an inadvertent start-up,[166] or a malodorant added to odorless gas may constitute the warning of the hazard or risk.[167]

2. Use of Symbols Rather Than Words

Symbols such as skull and crossbones may be necessary to constitute an adequate warning when the written word alone would be incomprehensible to foreseeable users. For example, a product anticipated for use by children or individuals unable to read or write English may require universally recognized symbols of the particular hazard or danger involved.[168] The duty to furnish this type

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402, 405 (Or. 1980); Le Marbe v. Dow Chem. Co., [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9179 (Ill. App. 1981).

164. *See* Dougherty v. Hooker Chem. Corp., 540 F.2d 174, 179 (3d Cir. 1976); Rindlisbaker v. Wilson, 519 P.2d 421, 428 (Idaho 1974).

165. *See* Spruill v. Boyle-Midway, Inc., 308 F.2d 79, 87 (4th Cir. 1962); Shell Oil Co. v. Gutierrez, 581 P.2d 271, 281-82 (Ariz. Ct. App. 1978).

166. Brown v. General Motors Corp., 355 F.2d 814, 820 (4th Cir. 1966).

167. Jones v. Hittle Serv., Inc., 549 P.2d 1383, 1392 (Kan. 1976).

168. *See* Hubbard-Hall Chem. Co. v. Silverman, 340 F.2d 402, 405 (1st Cir. 1965) (required warning in Spanish or by international symbols to foreseeable users of Hispanic origin who could not read or understand the printed word in English). *But see* Pierluisi v. E.R.

warning necessarily involves not only the type of product but, more importantly, the foreseeable intended uses and the environment of use of the product.[169]

3. Communication of the Risk of Harm

A warning must sufficiently convey the risk of danger associated with the product. The warning must be qualitatively sufficient to impart the particular risk of harm. In *Fiorentino v. A. E. Staley Mfg. Co.*,[170] the court emphasized that this represents a more substantial requirement than the mere size of type or number of exclamation points contained in a warning. Plaintiffs were carpenters who were burned in a flash fire while using a contact adhesive to install formica in a kitchen. Vapors from the adhesive, which were heavier than air, moved along the kitchen floor and became ignited by a closed oven pilot light. The pilot light was located eight feet from the adhesive and was concealed from view. A label on the adhesive container carried a warning "CAUTION: FLAMMABLE MIXTURE. DO NOT USE NEAR FIRE OR FLAME" and also "Keep Away from Heat, Sparks and Open Flame." The Court acknowledged that the warning was inadequate to alert even a professional user concerning the danger of using this flammable contact adhesive near a closed and concealed pilot light.[171]

Similarly, in *Chappuis v. Sears Roebuck & Co.*,[172] the warning that "hammer face may chip if struck against another hammer, hard nails, or other hard objects possibly resulting in eye or other

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Squibb & Sons, 440 F. Supp. 691, 695 (D. P.R. 1977) (warning printed in Spanish not essential for adequate notice of potential risk of harm notwithstanding that product supplier could foresee that many users could neither read nor understand English).

169. For example, products expected to be used by individuals not familiar with a product may require a symbol or picture rather than mere written words. Recently, in Ziglar v. E.I. Du Pont De Nemours & Co., 280 S.E.2d 510 (N.C. Ct. App. 1981), use of the words: "dangerous—poison" and accompanied by red skull and crossbone symbols placed on a container of clear liquid crop poison that was similar in appearance to water was not adequate warning as a matter of law. The court noted that the manufacturer should have added a coloration to the poison to distinguish it from water. *Id.* at 515-16.

170. 416 N.E.2d 998 (Mass. App. Ct. 1981).

171. *Id.* at 1003. The court acknowledged as a well settled principle of law that a manufacturer who undertakes to warn any user of the proper method of handling a product must provide complete and accurate warnings of any inherent risks in that use. *Id.* at 1003; *accord* Palmer v. Avco Distrib. Corp., 412 N.E.2d 959, 964 (Ill. 1980) (warning must delineate the specific risk or danger presented in use of product).

172. 358 So. 2d 926 (La. 1978).

bodily injury" was insufficient without an additional warning that the hammer, once chipped, must be discarded.[173] In *Little v. PPG Industries, Inc.*,[174] a label containing the words "vapor may be deadly" in red lettering and the phrase actually on the label "use with adequate ventilation" was deemed insufficient to communicate the particular danger. The court noted that the use of skull and cross bones appearing in a conspicuous place with a yellow background would have been more appropriate as well as a label containing such wording as "very dangerous", "highly toxic," "poisonous" or "vapor fumes dangerous if inhaled."[175]

Likewise, a "caution" may be inadequate when the magnitude of the potential harm requires a warning of "danger". In *Johnson v. Husky Industries, Inc.*,[176] a caution to use charcoal only in ventilated areas was not adequate to warn of the risk of burning charcoal indoors. In *Eddleman v. Scalco*,[177] the word flammable affixed to a product was deemed inadequate when the real danger posed by the product was its explosive characteristics.

A warning that adequately communicates the danger relieves the manufacturer of the obligation to provide any additional warnings.[178] An otherwise proper warning which adequately communicates the particular risk of harm need not always be conveyed directly to the individual consumer.[179] This situation exists when the ultimate user is not in a position to comprehend or prevent the danger. For example, in *LaBelle v. McCauley Industrial Corp.*,[180] the owner of a twin engine aircraft sued the manufacturer of the aircraft's dual blade propeller on a failure to warn. Plaintiff asserted that a direct warning was required to alert the aircraft owner of the risk that the starboard propeller could break off and slice into the fuselage. The manufacturer contended that it discharged

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173. *Id.* at 928.

174. 579 P.2d 940 (Wash. Ct. App. 1978), *aff'd as modified*, 594 P.2d 911 (Wash. 1979).

175. *Id.* at 943.

176. 536 F.2d 645 (6th Cir. 1976).

177. 484 S.W.2d 122 (Tex. Civ. App.—Beaumont 1972, writ ref'd n.r.e.).

178. *See* Skyhook Corp. v. Jasper, 560 P.2d 934, 938 (N.M. 1977) (crane supplier was not obligated to install optional alarm warning system where adequate warning was provided to keep crane away from high voltage lines).

179. A warning or directions regarding the proper loading of an aircraft is designed to inform the owner and operator of an aircraft and not the passengers. Stevens v. Cessna Aircraft Co., 170 Cal.Rptr. 925, 926 (Cal. Ct. App. 1981).

180. 649 F.2d 46 (1st Cir. 1981).

its duty by inserting a warning in the service manual apprising aircraft repair stations of the necessity of rounding and polishing sharp corners of the hub as a method to prevent breakage of the propeller. The propeller manufacturer acknowledged that its warning was indirect, yet nevertheless adequate to convey the risk of the propeller breakage. An indirect warning may suffice, even though it does not apprise the ultimate purchaser, as long as the warning eliminates excessive preventable danger. However, an indirect notice contained in the service manual that in the first instance fails to communicate the risk of propeller breakage is inadequate.[181]

4. Location of the Warning

A product representing a high risk of harm may be made to carry an understandable message on the product itself either by label or similar device.[182] In *Stapleton v. Kawasaki Heavy Industries, Ltd.*,[183] plaintiff was injured when he accidentally tipped over his motorcycle while cleaning it in the basement of his home. The fuel switch had not been turned to the off position and gas that leaked from the tank was ignited by the pilot light of a nearby water heater. The plaintiff contended that the motorcycle was defective due to a failure to warn of the dangerous nature of the fuel switch on the motorcycle. The Fifth Circuit noted:

> The manual containing the warning was in evidence, and the jury could determine whether putting the warning on page 13 in ordinary type was an adequate effort and whether the warning so located was sufficient to warn users of the danger. There is no merit to the assertion that the evidence does not support a finding of failure to warn.
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> Defendant's major point is a contention that plaintiff is barred under cases holding that, as a matter of law, failure to read a label is

181. *Id.* at 49.

182. *See, e.g.*, Griggs v. Firestone Tire & Rubber Co., 513 F.2d 851, 857 (8th Cir. 1975) (required warning to be impressed on the rim parts), *cert. denied*, 423 U.S. 865 (1975); West v. Broderick & Bascom Rope Co., 197 N.W.2d 202, 213 (Iowa 1972) (metal cable should have had rating tag affixed directly to cable rather than merely prescribing rating capacity in attached pamphlet); Miller v. Bock Laundry Mach. Co., 568 S.W.2d 648, 652 (Tex. 1977) (warning label should be attached to commercial washer rather than placed in operator's manual detached from product).

183. 608 F.2d 571 (5th Cir. 1979).

> contributory negligence. These cases involve failure to read labels attached to the product. Here the warning is on page 13 of the owner's manual in ordinary type. Whether a warning is physically attached to a product has been held to be of significance in many cases from other jurisdictions.[184]

When the magnitude of the danger is extremely severe, a warning properly placed on the product, together with warnings contained within the product owner's manual, may be required.[185] As an example, in *Gordon v. Niagara Machine & Tool Works*,[186] plaintiff suffered an amputation of four fingers when a punch press unexpectedly recycled. The court observed that instructions and warnings in a service manual were no substitute for a warning attached to the press.[187] Similarly, in *Russell v. G.A.F. Corp.*,[188] the court indicated that the manufacturer of asbestos ceiling sheets did not discharge its duty by distributing an informational booklet which accompanied bundles of the sheets and stated that grids distributing stress should be used underneath the material. Likewise, in *Griggs v. Firestone Tire & Rubber Co.*,[189] a tire manufacturer's catalogue warning that a mismatched rim assembly could cause a tire to explode was insufficient in the absence of a warning imprinted directly on the tire. In some instances, however, instructions and warnings contained in manuals that accompany particular products, even in the absence of a direct label affixed to the product, satisfies the duty to warn.[190]

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184. *Id.* at 573.

185. *Cf.* Wolfe v. Ford Motor Co., 376 N.E.2d 143, 146 (Mass. App. Ct. 1978) (court concluded warning placed in owner's manual and placement of rating plate on truck door to warn of serious accident which could result from blowout did not foreclose the issue of adequacy of warning).

186. 574 F.2d 1182 (5th Cir. 1978).

187. *Id.* at 1187. The court noted that a warning in the service manual would not reach the ultimate press user. The court was influenced by an assumption that the engineering department would generally retain the manual and, therefore, any warnings contained in the manual would not be calculated to reach the user of the product. *Id.* at 1186; *accord* Air Shields, Inc. v. Spears, 590 S.W.2d 574, 578 (Tex. Civ. App.—Waco 1979, writ ref'd n.r.e.) (court upheld jury finding of necessity for warning label to be affixed to incubator used in hospital).

188. 422 A.2d 989 (D.C. App. 1980).

189. 513 F.2d 851 (8th Cir), *cert. denied*, 423 U.S. 865 (1975).

190. *See, e.g.*, Ulrich v. Kasco Abrasives Co., 532 S.W.2d 197, 200 (Ky. 1976) (instruction sheets and label affixed to grinding machine was deemed adequate to support a directed verdict for defendant); Beier v. International Harvester Co., 178 N.W.2d 618, 620 (Minn. 1970) (manual sufficiently explained the proper procedure for mounting truck wheels

The location of a warning on the product is particularly important. A warning affixed to a product at a location not calculated to catch the eye of the user may be deemed inadequate.[191]

5. Clear and Unambiguous Warning

Whether a warning adequately makes a user aware of the danger or its potential severity depends on the language used and the impression that it is calculated to make upon the mind of the average user of the product. This necessarily involves questions of display, syntex and emphasis.[192] A warning must be neither ambiguous nor vague in its content. In *Harrison v. Flota Mercante Grancolombiana S.A.*,[193] the word "prolonged" in the phrase "avoid prolonged breathing" of vapors was deemed ambiguous.[194] Similarly, a warning to use the drug Kantrex on a one-time basis only for post-surgical irrigation was not sufficiently clear to communicate the hazard to the physician that repeated use of Kantrex in irrigating surgical wounds could cause an ototoxic condition.[195] The warnings must bring home to the user the particular danger or risk of harm presented by the product.

6. Sufficiently Broad and Encompassing Warning

A warning, in order to be appropriate and adequate, must not be unduly narrow and limited in scope.[196] The rule that a warning

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although the user did not actually read the manual); Lopez v. ARO Corp., 584 S.W.2d 333, 337 (Tex. Civ. App.—San Antonio 1979, writ ref'd n.r.e.) (instruction for proper uses of grinder contained in accompanying manual sufficient for providing warning).

191. *See* American Optical Co. v. Weidenhamer, 404 N.E.2d 606, 615 (Ind. Ct. App. 1980) (small tag on safety glasses placed in location unlikely to attract user's attention was inadequate); Schuh v. Fox River Tractor Co., 218 N.W.2d 279, 284 (Wis. 1974) (warning on crop blower located at ankle height was not adequate).

192. *See* Stapleton v. Kawasaki Heavy Indus., Ltd., 608 F.2d 571, 573 n.4 (5th Cir. 1979); D'Arienzo v. Clairol, Inc., 310 A.2d 106, 110 (N.J. Super. Ct. Law Div. 1973).

193. 577 F.2d 968 (5th Cir. 1978).

194. *Id.* at 979; *see also* Kritser v. Beech Aircraft Corp., 479 F.2d 1089, 1096 (5th Cir. 1973) (warning to avoid "prolonged" operation in a slip or slide under low fuel conditions was too vague to adequately inform the pilot of the particular hazard).

195. *See* Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978) (warning to doctors in the PDR on the use of the drug Kantrex was too vague because it failed to warn against the danger of repeated irrigation of a surgical wound when one-time only post-surgical irrigation was considered safe).

196. *See* Johnson v. Husky Indus., Inc., 536 F.2d 645, 648 (6th Cir. 1976); Schering v. Geisecke, 589 S.W.2d 516, 518 (Tex. Civ. App.—Eastland 1979, writ ref'd n.r.e.).

must be sufficiently broad to convey the risk of harm encompasses the obligation to instruct both as to the safe and proper use and the proper method of disposal of the product. In *Brownlee v. Louisville Varnish Co.*,[197] a five-year-old boy was seriously burned when an aerosol paint can exploded as he lit a fire in a trash container. The can had been discarded and placed in the family trash receptacle by the boy's mother the previous day. Affixed to the aerosol paint can was the warning "READ DIRECTIONS CAREFULLY! . . . DO NOT USE OR STORE IN AREAS WHERE HEAT ABOVE 120F, SPARKS OR OPEN FLAME MAY BE PRESENT. DO NOT PUNCTURE OR INCINERATE. EXPOSURE TO HEAT OR PROLONGED EXPOSURE TO SUN MAY CAUSE BURSTING . . . EXTREMELY FLAMMABLE. Product disposal falls within the realm of intended or foreseeable use since a spent or used up product must inevitably be discarded. A warning that fails to apprise users of the danger of disposing of the container without first ascertaining that it is empty, is too narrow to convey the risk of harm associated with the product. The court stated:

> [I]f the risk of explosion and spraying of hot burning paint could have been diminished or eliminated by emptying the can of unused paint and reducing the pressure inside it prior to disposal, an aspect unanswered by counsel at oral argument, then a jury might conclude that the warning placed on the can was also inadequate.[198]

The view in *Brownlee* that the product supplier's duty to warn of dangers inherent in the use of a product includes the subsidiary duty to provide directions and warning for safe disposal is particularly pertinent in relation to household products where the exposure of children is a distinct possibility.[199] Although a warning regarding proper disposal would appear to be less crucial in an industrial setting, some jurisdictions have deemed a disposal warning necessary where the disposed product involved a significant danger.[200]

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197. 641 F.2d 397 (5th Cir. 1981).

198. *Id.* at 401.

199. *See* Tucci v. Bossert, 385 N.Y.S.2d 328, 331 (N.Y. App. Div. 1976) (adequate warning for disposal of Drano can).

200. *See* Shell Oil Co. v. Gutierrez, 581 P.2d 271, 279 (Ariz. Ct. App. 1978) (warning as to safe disposal of empty drums of industrial solvent Xylene).

7. *Undiluted Warning*

Over promotion of a product and other activities of a manufacturer calculated to dilute warnings may emasculate an otherwise legally sufficient warning. Over-promotion of prescriptive drugs may be directed to induce physicians to focus only on the beneficial aspects of the drugs and to ignore the potential side effect.

In *Salmon v. Parke-Davis & Co.*,[201] the manufacturer of the drug Chloromycetin furnished plaintiff's physician a desk calendar advertising the drug along with a sample package containing a warning about the drug. The Court observed that the calendar might remain on the physician's desk long after the sample and its warning had been discarded, thereby effectively nullifying a valid warning in the package.[202] Similarly, advertising promotions concerning the safety aspects of a product are relevant to the issue of the adequacy of a warning of the risk.[203]

V. Focus of the Duty to Warn or Instruct

A. *Duty to the Ultimate User or Consumer*

Generally, the duty to warn extends to and must be reasonably calculated to reach the ultimate user or consumer of the product.[204] The class of ultimate consumers or users to whom a duty is

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201. 520 F.2d 1359 (4th Cir. 1975).

202. *Id.* at 1363; *accord* Stevens v. Parke-Davis & Co., 507 P.2d 653, 661, 107 Cal. Rptr. 45, 53 (Cal. 1973).

203. *See* Berkebile v. Brantly Helicopter Corp., 337 A.2d 893, 903 (Pa. 1975); American Optical Co. v. Weidenhamer, 404 N.E.2d 606, 617 (Ind. Ct. App. 1980). Advertising safety glasses as "Sure-Guard" and "Super Armorplate" represented to the user that the glasses offered the highest degree of protection and offset a miniscule warning that "lenses are impact resistant but not unbreakable." American Optical Co. v. Weidenhamer, 404 N.E.2d 606, 617 (Ind. Ct. App. 1980).

204. *See* RESTATEMENT (SECOND) OF TORTS § 402A comment i (1965). In Reyes v. Wyeth Laboratories, 498 F.2d 1264 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974), the court concluded that the warning of the dangers of Sabine polio vaccine must reach the patient during distribution in a mass immunization program where the product supplier could perceive that the vaccine would be distributed without a learned intermediary evaluating the potential risk of harm. *Id.* at 1276. Additionally, the Court of Appeals for the Ninth Circuit in Jackson v. Coast Paint & Lacquer Co., 499 F.2d 809 (9th Cir. 1974), held that warning that fumes from an epoxy paint could ignite or explode when used in a confined area must be calculated to reach the ultimate user of the product, i.e., the painters using the epoxy paint. The duty to warn the ultimate user is not abrogated by the fact that others in the distributive chain likewise have a duty to warn. *Id.* at 814.

owed extends to the class or group reasonably expected to come in contact with the product as it proceeds to its ultimate destination.[205]

The duty to warn corresponds to the knowledge of the product danger possessed by the supplier relative to the ultimate user. Generally, the duty arises where there is unequal knowledge. For example, in *Rawlings Sporting Goods Co. v. Daniels*,[206] the manufacturer of football helmets worn by high school players was held liable for a failure to warn that the helmet would not protect against head injuries. The court reasoned that the manufacturer possessed superior knowledge of the limitations of the product on its protective ability.[207] The manufacturer of automobile jacks in *Illinois State Trust Co. v. Walker Manufacturing Co.*,[208] was obligated to warn the ultimate user of the risks involved in positioning all four jackstands with the "weak" sides pointed in the same direction. The existence of an unequal knowledge between the manufacturer and the average repairmen of the risk of danger occasioned by the highly unstable condition of an improperly positioned jack mandated a warning.[209] Similarly, in *Chappuis v. Sears Roebuck & Co.*,[210] the superior knowledge of the danger possessed by the manufacturer and retailer that a chipped hammer was susceptible to further chipping imposed on the supplier a duty to warn of this risk. Dangers and risks generally known to the user's particular trade or profession, however, eliminate the necessity of a warning.[211]

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205. *See, e.g.*, Harrison v. Flota Mercante Grancolombiana S. A., 577 F.2d 968, 977 (5th Cir. 1978) (longshoreman loading chemicals injured by inhalation of isobutyl acrylate fumes); Reliance Ins. Co. v. Al E. & C., Ltd., 539 F.2d 1101, 1105 (7th Cir. 1976) (the manufacturer was obligated to instruct and warn bailee of large coal box of the dangers associated with its handling); Hamilton v. Motor Coach Indus., Inc., 569 S.W.2d 571, 576 (Tex. Civ. App.—Texarkana 1978, writ ref'd n.r.e.) (manufacturer was obligated to warn repairman and mechanic of the dangers in effectuating repairs on spring-loaded air cylinder where the mechanic was not familiar with the internal mechanism of product).

206. 619 S.W.2d 435 (Tex. Civ. App.—Waco 1981, writ ref'd n.r.e.).

207. *Id.* at 439.

208. 392 N.E.2d 70 (Ill. App. Ct. 1979).

209. *Id.* at 73-74.

210. 358 So. 2d 926 (La. 1978).

211. *See* Shawver v. Roberts Corp., 280 N.W.2d 226, 233 (Wis. 1979) (there is no duty to warn members of trade or profession of dangers that are generally known and recognized by that particular trade or profession). This is a generally recognized principle in most jurisdictions. *See, e.g.*, Wansor v. George Hantscho Co., 595 F.2d 218, 221 (5th Cir. 1979); Marti-

B. *Marketing to Group Expected to Supervise Product Use*

The distributive chain of product supply may alter the duty to warn. Thus, the duty to warn may be imposed on the intermediate consumer, purchaser, user or supplier who is expected to supervise the use of the product. For example, the manufacturer of an aircraft is not required to warn passengers of an aircraft, the ultimate consumers, concerning the overload potential of the aircraft. The manufacturer discharges it duty by providing a warning to the pilot in the owner's manual.[212]

Similarly, the duty to warn may properly be allocated to an intermediate employer who purchases the product and uses it in the normal course of business. In *McWaters v. Steel Service Co.*,[213] an employee of a construction company was fatally injured when a bundle of steel rods being used in the construction of a bridge collapsed. A supplier of basic construction materials possessing no control over the manner in which the materials are used was not obligated to warn the ultimate user of the danger of using the materials without proper safeguards. The duty to warn appropriately rests with the experienced bridge contractor employer.[214] The court in *Schmeiser v. Trus Joist Corp.*,[215] recognized that warnings and instructions furnished to the contractor regarding assembly of its joist insulated the manufacturer from an action in strict tort liability for an injury to the contractor's employee precipitated by a falling joist. Similarly, in *Reed v. Pennwalt Corp.*,[216] the manufacturer of caustic soda used in a food processing plant was not required to warn potato trimmer plant employees of the hazards of

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nez v. Dixie Carriers, Inc., 529 F.2d 457, 466-67 (5th Cir. 1976); Posey v. Clark Equip. Co., 409 F.2d 560, 564 (7th Cir. 1969). *But see* Peterson v. B/W Controls, Inc., 366 N.E.2d 144, 147 (Ill. Ct. App. 1977) (imposes the duty to warn experienced electricians of uninsulated wires located in control panel box based on the unequal knowledge rationale).

212. *See* Stevens v. Cessna Aircraft Co., 170 Cal. Rptr. 925, 926 (Cal. Ct. App. 1981).

213. 597 F.2d 79 (6th Cir. 1979). The courts recognize that a manufacturer may, under appropriate circumstances, rely on the employer purchaser of a product to supervise its employees in the proper and safe use of the product. *See* Marshall v. H.K. Ferguson Co., 623 F.2d 882, 886 (4th Cir. 1980). The same rule is applied to adequate warnings furnished a physician. *See* Buckner v. Allergan Pharmaceuticals, Inc., 400 So. 2d 820, 822 (Fla. Dist. Ct. App. 1981).

214. McWaters v. Steel Serv. Co., 597 F.2d 79, 80 (6th Cir. 1979).

215.540 P.2d 998 (Or. 1975).

216. 591 P.2d 478 (Wash. Ct. App. 1979).

the use of its product.[217] Rather, a warning to the processor satisfied the duty of warning the plant employees.

Jurisdictions express divergent views whether a duty to warn of risks involved in the use of industrial equipment exists. One view recognizes that a warning to an intermediate employer discharges the manufacturer's duty.[218] As an example, in *Shanks v. A.F.E. Industries, Inc.*[219] plaintiff, a grain elevator employee sustained severe leg injury when the elevator he was repairing became activated. Plaintiff complained of the lack of instructions or warning concerning the automatic characteristic of the dryer. The Indiana appellate court concluded that the manufacturer discharged its duty by warning the plaintiff's employer.[220] The grain elevator employer was obligated to instruct and properly warn his employee since the employer controlled the work space, the employment and placement of personnel and controlled operation of the grain dryer.

The opposite approach was adopted in *Hopkins v. Chip-In-Saw, Inc.*,[221] Plaintiff's husband was fatally injured when struck by a board that was forcibly ejected from a lumber machine manufactured by the defendant. A representative of the defendant responsible for installing the saw cutting machine had orally warned the plant superintendent and manager not to operate the device without its antikickback fingers in place. The decedent, however, had removed the anti-kickback fingers prior to the accident. The Eight Circuit stated:

> When a manufacturer can reasonably foresee that the warnings it gives to a purchaser of its product will not be adequately conveyed to probable users of the product, then its duty to warn may extend beyond the purchaser to those persons foreseeably endangered by the products used. Warnings given to the purchaser do not necessarily insulate the manufacturer from liability to injured users of the product.[222]

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217. *Id.* at 480; *see also* Little v. PPG Indus., 579 P.2d 940, 947 (Wash. Ct. App. 1978) (ample evidence that failure to warn plaintiff's employer of dangers of solvent inhalation was intervening cause sufficient to isolate solvent manufacturer from liability for failure to warn the plaintiff employee).

218. *See* Ulrich v. Kasco Abrasives Co., 532 S.W.2d 197, 199 (Ky. 1976); Temple v. Wean United, Inc., 364 N.E.2d 267, 273 (Ohio 1977).

219. 403 N.E.2d 849 (Ind. Ct. App. 1980).

220. *Id.* at 857.

221. 630 F.2d 616 (8th Cir. 1980).

222. *Id.* at 619.

Similarily, in *Kozlowski v. John E. Smith's Sons Co.*,[223] the manufacturer of a sausage stuffing machine was required to warn the ultimate user notwithstanding an adequate warning to the industrial purchaser of the equipment.[224] Product repair or maintenance personnel who are employees of the ultimate purchaser of equipment may likewise be owed a warning of potential risks of harm. For example, a transformer manufacturer is obligated to convey a warning of the danger of substituting fuses in the product sufficient to reach an electrician employed by the purchaser of the transformer.[225]

The manufacturer of children's clothing is obligated to furnish a warning of any flammable characteristics of the fabric. The warning must be calculated to apprise the parents of the children of the attendant dangers of the clothing.[226] The parent, and not the child, makes the election based on the warning and instructions for safe use. An informed choice must be afforded the parent in selecting and purchasing clothing for minor children.

C. *Products Supplied in Bulk*

Generally a bulk supplier is not obligated to provide warnings to ultimate consumers. In *Jones v. Hittle Serv., Inc.*,[227] the manufacturer of bulk transported propane gas was not required to warn the public and users that the malodorant might be scrubbed and become odorless under certain unusual circumstances. It was the duty of the gas distributor to communicate appropriate warnings to the consuming public.[228] Moreover, it would appear that the

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223. 275 N.W.2d 915 (Wis. 1979).

224. *Id.* at 922-23; *see also* Seibel v. Symons Corp., 221 N.W.2d 50, 55 (N.D. 1974).

225. *See* Bich v. General Elec. Co., 614 P.2d 1323, 1326 (Wash. Ct. App. 1980).

226. *See* Mattocks v. Daylin, Inc., 78 F.R.D. 663, 667 (W.D. Pa. 1978), *rev'd on other grounds*, 611 F.2d 30 (3d Cir. 1979); Bellotte v. Zayre Corp., 352 A.2d 723, 725 (N.H. 1976); *see also* Spruill v. Boyle-Midway, Inc., 308 F.2d 79, 83-84 (4th Cir. 1962) (furniture polish used in a household). In Rumsey v. Freeway Manor Minimax, 423 S.W.2d 387 (Tex. Civ. App.—Houston [1st Dist.] 1968, no writ), the failure to include or affix a label to a household poison advising the potential user that there was no known antidote for the poison constituted an unreasonably dangerous condition. *Id.* at 393.

227. 549 P.2d 1383 (Kan. 1976).

228. *Id.* at 1394-95; *accord* Parkinson v. California Co., 255 F.2d 265, 269 (10th Cir. 1958). *But see* Suchomajcz v. Hummel Chem. Co., 524 F.2d 19, 27 (3d Cir. 1975) (supplier of harmless chemical component was obligated to warn ultimate users or consumers of dangerous propensities of chemical when chemical would be incorporated as a constitutional element of assembled fireworks kit).

malodorant in the odorless gas itself constituted the warning of the danger.

Bulk supply presents a particularly difficult problem. For example, chemicals sold by truck transport or rail transport are normally expected to be packaged by others in smaller containers for ultimate sale to the public. It is realistically impossible to affix any type of label or provide any type of accompanying document that would follow the product to its ultimate destination and the ultimate user. Consequently, the intermediate distributor occupies a particularly important position in the distributive chain of bulk products that, because of dangerous conditions or hazards, require warnings and directions for safe use to the ultimate user.

Although the general rule insulates from liability the manufacturer of a product who sells the product in bulk accompanied by a warning to his immediate vendee, some jurisdictions impose on the manufacturer the duty to provide an adequate warning to ultimate users in the distributive chain.[229] This represents a distorted view of reality and, in effect, judicially characterizes the supplier as an insurer against product related harm.

D. Prescriptive Drugs

Prescriptive drugs, and apparati such as prescriptive medical devices and appliances, constitute an exception to the general principle that the product supplier must warn the ultimate user of a product. The duty to warn is discharged when the manufacturer adequately warns the medical profession of dangers associated with the drug or the medical device.[230] The duty to warn, of course, must be reasonable under the circumstances.[231] This exception is predicated on the fact that the physician is a learned intermediary

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229. *See* Bryant v. Technical Research Co., 654 F.2d 1337, 1347 (9th Cir. 1981); Terhune v. A.H. Robins Co., 577 P.2d 975, 977-79 (Wash. 1978).

230. *See, e.g.*, Hoffman v. Sterling Drug, Inc., 485 F.2d 132, 141-42 (3d Cir. 1973); Gravis v. Parke-Davis & Co., 502 S.W.2d 863, 870 (Tex. Civ. App.—Corpus Christi 1973, writ ref'd n.r.e.); Chambers v. G.D. Searle & Co., 577 P.2d 975, 977 (Wash. 1978). The warning to the physician, however, must satisfy the test of adequacy. *See* McCue v. Norwich Pharmaceutical Co., 453 F.2d 1033, 1035 (1st Cir. 1972). The warning to each physician expected to prescribe the drug must be reasonable under all the circumstances. *See* Lindsay v. Ortho Pharmaceutical Corp., 637 F.2d 87, 92 (2d Cir. 1980).

231. *See, e.g.*, Sterling Drug, Inc. v. Yarrow, 408 F.2d 978, 992 (8th Cir. 1969); Ortho Pharmaceutical Corp. v. Chapman, 388 N.E.2d 541, 549 (Ind. Ct. App. 1979); Richards v. Upjohn Co., 625 P.2d 1192, 1196 (N.M. Ct. App. 1980).

who knows the patient and is the party best qualified to make an informed choice after weighing the utility and benefits of the drug or medical device against the risk of harm inherent in its use.[232] The rule that the drug manufacturer as a matter of law fulfills its obligation by communicating an adequate warning to the physician was duly noted in *Fellows v. USV Pharmaceutical Corp.*[233] Plaintiff contended that he sustained serious side effects from use of the prescription drug Doriden. In addressing the plaintiff's strict tort liability claim, the court stated:

> [T]he manufacturer will not incur liability under . . . Section [402A], unless the manufacturer has failed to provide adequate warnings of the drug's possible dangers. The audience to whom these warnings must be directed is the medical community, not the consuming public. Since there is no dispute regarding the adequacy of USV's warnings to the medical community as well as to plaintiff's physician, USV is not liable to plaintiff under Section 402A as a matter of law.[234]

Following this same reasoning, the plaintiff-physician who prescribes antibiotics for self treatment may not recover in strict tort liability for side effects he suffers. The court in *Wolfgruber v. Upjohn Co.*[235] noted that a manufacturer of prescriptive drugs is absolved from liability as a matter of law if it provides specific detailed information concerning the drug to the prescribing physician.[236]

This exception applies even though the manufacturer may foresee that physicians may not provide the patient with a warning of the particular risks involved. The physicians' duty to warn patients of possible side effects of a drug is not absolute. Since the extent of disclosure is a matter of medical judgment, a physician's failure to pass on a warning to a patient does not impose that duty on the manufacturer.[237]

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232. *See, e.g.*, Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1276 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974); Ferrigno v. Eli Lilly & Co., 420 A.2d 1305, 1321 (N.J. Super. Ct. Law Div. 1980); Bristol-Myers Co. v. Gonzales, 561 S.W.2d 801, 804 (Tex. 1978).

233. 502 F. Supp. 297 (D. Md. 1980).

234. *Id.* at 300.

235. 423 N.Y.S.2d 95 (N.Y. App. Div. 1979).

236. *Id.* at 97-98.

237. *See* Buckner v. Allergan Pharmaceuticals, Inc., 400 So. 2d 820, 822-23 (Fla. Dist. Ct. App. 1981); *cf.* Seley v. G.D. Searle & Co., 423 N.E.2d 831, 840 (Ohio 1981).

On the other hand, the manufacturer who fails to adequately warn the physician is not only strictly liable to the injured patient, but may as well be required to indemnify the prescribing physician. In *Oksenholt v. Lederle Laboratories*,[238] plaintiff, a physician, was sued by a patient for loss of vision following use of a drug prescribed by the physician for treatment of pulmonary tuberculosis. The patient entered into a settlement agreement with the physician and the physician then filed suit against the drug manufacturer for failure to provide adequate warnings of the potential side effects of the drug. Concluding that the physician could maintain a suit for indemnity based on a failure to provide adequate warning, the court stated:

> Although plaintiff's injuries are foreseeable, we must still decide if, as a matter of policy, the duty to inform plaintiff should include a duty, where the information is inadequate, to protect him against these particular foreseeable harms. We conclude that it should . . . . [A] doctor is entitled to protection against foreseeable harm he may suffer because he prescribes a particular drug without full awareness of its potential harm to his patients, where the doctor's lack of awareness is due to a breach of the duty owed to him by the drug's manufacturer.[239]

The general rule excepting the drug manufacturer from providing a warning to the ultimate product consumer was recently rejected in the context of the oral contraceptive. In *Lukaszewicz v. Ortho Pharmaceutical Corp.*,[240] the pill manufacturer was obligated to warn not only the prescribing physician but also to provide an adequate warning to potential users of the possible side effects from using the pill. The court observed that federal regulations were designed to protect consumers from harmful side effects associated with oral contraceptives by providing warning to the consumers.[241] This decision contradicts earlier decisions that the

238. 625 P.2d 1357 (Or. Ct. App. 1981).

239. *Id.* at 1362-63.

240. 510 F. Supp. 961 (E.D. Wis. 1981).

241. *Id.* at 965; *see* 21 C.F.R. § 310.501 (1981). Section 310.501(a) requires that, "patients be fully informed of the benefits and risks involved in the use of these drugs. Information in lay language concerning effectiveness, contraindication, warnings, precautions, and adverse reactions shall be furnished to each patient receiving oral contraceptives." *Id.* § 301.501(a). Section 310.501(2)(vi) states that the summary provided each patient must include a statement of the most common side effects such as " nausea and vomiting, weight

duty to warn of the side effects of oral contraceptive does not extend beyond the prescribing physician.[242]

The prescriptive drug exception may also be inapplicable where drugs are sold over the counter without prescription or where prescriptive drugs may be dispensed in mass immunization without the intervention of a learned intermediary, such as a physician.[243] Of course, use of a drug beyond the limitations of a prescription or without a prescription should foreclose any basis to complain of the lack of a warning.[244]

Like the drug manufacturer, a manufacturer of medical equipment may have a duty to warn physicians and medical personnel regarding the use of its product. As an example, the manufacturer of an incubator may be obligated to warn of the risks in giving supplemental oxygen.[245] Other jurisdictions consider that an incubator manufacturer is not obligated to warn physicians of the state of current medical research relative to the use of oxygen in conjunction with the product.[246] Since a physician possesses as much, if not more, knowledge of the medical significance and risks of harm in prescribing medical devices for patient care, it seems highly questionable that a manufacturer is under a duty to warn the physician of knowledge that, by reason of a medical education and

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change, change in menses, and breast tenderness." *Id.* § 310.501(2)(vi).

242. *Compare* Lukaszewicz v. Ortho Pharmaceutical Corp., 510 F. Supp. 961, 965 (E.D. Wis. 1981) (manufacturer obligated to warn potential users of possible side effects of pill) *with* Timm v. Upjohn Co., 624 F.2d 536, 537 (5th Cir. 1980) (manufacturer has no duty to warn consumer of drug so long as prescribing physician has been adequately warned) *and* Goodson v. Searle Laboratories, 471 F. Supp. 546, 549 (D. Conn. 1978) (where physician had been adequately warned of increased risk of thrombeombolic disease manufacturer was not liable) *and* Dunkin v. Syntex Laboratories, Inc., 443 F. Supp. 121, 123 (W.D. Tenn. 1977) (duty to warn lies with the physician not the manufacturer).

243. *See* Reyes v. Wyeth Laboratories, 498 F.2d 1264, 1276 (5th Cir.), *cert. denied*, 419 U.S. 1096 (1974). In Torsiello v. Whitehall Laboratories, Inc., 398 A.2d 132 (N.J. Super. Ct. App. Div. 1979), a jury question was raised whether a warning accompanying Anacin adequately conveyed to the drug purchaser the risk of danger from prolonged use of the aspirin. *Id.* at 140.

244. *See* Ortho Pharmaceutical Corp. v. Chapman, 388 N.E.2d 541, 557 (Ind. Ct. App. 1977).

245. *See* Air Shields, Inc. v. Spears, 590 S.W.2d 574, 578 (Tex. Civ. App.—Waco 1979, writ ref'd n.r.e.).

246. *See* May v. DaFoe, 611 P.2d 1275, 1277 (Wash. Ct. App. 1980). The court in *May* stated "[e]quipment manufacturers need not be trained in medical science; for them to render advice on medical treatment would be suspect and dangerous. Their duty to warn should relate only to design, engineering, and functional dangers." *Id.* at 1277.

training, makes the physician more knowledgeable than the product supplier.

E. Foreseeable Misusers

The duty to warn extends to all individuals who may foreseeably come in contact with a product in its travel through the distributive chain. Foreseeable users include product handlers and transporters,[247] and children playing with a product.[248] The duty is predicated on the product supplier's knowledge and reasonable anticipation of the group or class who foreseeably may come in contact with or use the product.

VI. Limitations on the Duty to Warn

A. Open and Obvious Dangers

There is no duty to warn ultimate users or consumers of dangers that are clearly obvious or apparent.[249] It would be redundant to warn an ultimate user of a hazard that is clearly obvious and known. The purpose of a warning is to communicate information of hazards and risks to afford the ultimate user an opportunity to weigh the risk of harm against utility of the product.[250] If the danger inherent in the product is obvious, the need to warn is simply unnecessary.[251] This does not necessarily imply, however, that the

247. *See* Harrison v. Flota Mercante Grancolombiana S. A., 577 F.2d 968, 977 (5th Cir. 1978).

248. Novak v. Piggly-Wiggly Puget Sound Co., 591 P.2d 791, 796 (Wash. Ct. App. 1979) (manufacturer of B-B gun could anticipate that child might injure himself by means of ricochet while using gun).

249. *See, e.g.*, Hagans v. Oliver Mach. Co., 576 F.2d 97, 101-02 (5th Cir. 1978) (obvious danger posed by multifunctional industrial table saw with an unprotected circular blade spinning at 3600 revolutions per minute); Price v. Niagara Mach. & Tool Works, 136 Cal. Rptr. 535, 538 (Cal. Ct. App. 1977) (danger to industrial worker in placing his hand under rim of pneumactic press); Bookout v. Victor Comptometer Corp., 576 P.2d 197, 198 (Colo. Ct. App. 1978) (inherent danger in aiming a B-B gun at another person).

250. *See* Barrett v. Atlas Powder Co., 150 Cal. Rptr. 339, 342 (1978). There is, therefore, no duty to warn a physician of the dangerous side effects of drugs that he is aware of. *See* Mulder v. Parke-Davis & Co., 181 N.W.2d 882, 885 (Minn. 1980).

251. The courts emphasize the absence of any duty to warn of known or obvious dangers is due to the fact that no one needs notice or warning of what is either known or reasonably may be expected to be known. *See, e.g.*, Marshall v. H.K. Ferguson Co., 623 F.2d 882, 886 (4th Cir. 1980); Billiar v. Minnesota Mining & Mfg. Co., 623 F.2d 240, 243 (2d Cir. 1980); McIntyre v. Everest & Jennings, Inc., 575 F.2d 155, 160 (8th Cir. 1978).

product may not be defective in design.

The determination of whether a danger is obvious or apparent is dependent on a consideration of the status, age, intelligence and training of the user. In *McIntyre v. Everest & Jennings Inc.*,[252] the plaintiff, a paraplegic prior to the accident in question, was injured when a wheeled commode in which he was sitting tipped forward. The manufacturer was not obligated to furnish a warning because of the plaintiff's knowledge as well as the obvious nature of the danger of the commode tipping if he leaned too far forward.[253] In *Hagans v. Oliver Machinery Co.*,[254] plaintiff was injured when his hand was caught in an unprotected saw blade. The Court concluded that a warning of the hazard posed by the unprotected saw blade was unnecessary since the condition of the product and the hazard associated with that product was obvious and fully appreciated by the user.[255] In *Gilmour v. Norris Paint & Varnish Co.*,[256] plaintiff's finger was amputated after he placed his finger over the nozzle of an airless paint sprayer causing paint thinner to be injected in his finger. Affixed to the tip of the sprayer's nozzle was the cautionary language: WARNING: IMPROPER USE CAN CAUSE INJURY—Read Instructions. Moreover, the court concluded that the warning given was adequate as a matter of law. The manufacturer was not required to warn that the spray could penetrate the skin and poison upon injection when the plaintiff possessed full knowledge of this danger.[257]

The nature and degree of the risk of harm must be open and fully appreciated. In *Trujillo v. Uniroyal Corp.*,[258] plaintiff, a repairman, was attempting to mount a 16 inch tire on a 16.05 inch rim, when the tire exploded. Although recognizing that a warning of danger is not required when the user possesses a knowledge of that danger, the court observed that "a belief that it should not be

252. 575 F.2d 155 (8th Cir. 1978).

253. *Id.* at 159-60; *accord* Sowles v. Urschel Laboratories, Inc., 595 F.2d 1361, 1365 (8th Cir. 1979) (no duty to warn machine operators of obvious danger of hand injury while attempting to unclog the blades of poultry dicing machine); *see also* Noel, *Products Defective Because of Inadequate Directions or Warnings*, 23 Sw. L.J. 256, 274 (1969) ("apparent dangers of this sort do not violate the normal expectations of the typical user of the product").

254. 576 F.2d 97 (5th Cir. 1978).

255. *Id.* at 102.

256. 627 P.2d 1288 (Or. Ct. App. 1981).

257. *Id.* at 1289-91.

258. 608 F.2d 815 (10th Cir. 1979).

done because it may hurt the tire, or even that it may cause injury is different from knowing that there is a risk of explosion, of serious or even fatal bodily harm. Not merely some risk but the nature and degree of the risk must be appreciated."[259]

Similarly, in *Hohlenkamp v. Rheem Manufacturing Co.*,[260] the court stringently interpreted the open and obvious limitation on the duty to warn. Plaintiff sustained burn injuries as a result of a gas water heater explosion in a utility room. Plaintiff had stored a two gallon can of gasoline in close proximity to the heater. The danger of storing combustibles in close proximity to a gas-fired appliance having a constant pilot light was not so open and obvious to obviate the necessity of a warning. The court reasoned "the flame of a pilot light is generally out of sight and the danger is hidden from view, perhaps frequently forgotten and, in the case of some individuals, not even recognized."[261]

B. Common Knowledge to the General Public

A corollary to the rule limiting the duty to warn of obvious dangers is the rule that there is no duty to warn of dangers that are commonly known and appreciated by the general public.[262] As an example, in *Garmen v. American Clipper Corp.*,[263] the supplier of a motor home equipped with a propane gas stove is not required to warn of the risk of harm attending the use of natural gas.[264] The court in *Garmen* stated:

Even if its [the cook stove's] use required the use of natural gas,

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259. *Id.* at 819. The court emphasized both the appreciation of the danger and the degree of risk constituted the controlling factors in assessing a duty to provide an adequate warning and instructions for use. *Id.* at 819.

260. 601 P.2d 298 (Ariz. Ct. App. 1979).

261. *Id.* at 300; *see also* Harris v. Karri-On Campers, Inc., 640 F.2d 65, 76 (7th Cir. 1981) (danger of leaking propane gas in camper was not open and obvious).

262. *See, e.g.*, Burton v. L.O. Smith Foundry Prods. Co., 529 F.2d 108, 112 (7th Cir. 1976) (dangers of kerosene, particularly when combined with other flammable products, are commonly known); Scheller v. Wilson Certified Foods, Inc., 559 P.2d 1074, 1077 (Ariz. Ct. App. 1976) (common knowledge that pork had to be cooked to avoid trichinosis); Vance v. Miller-Taylor Shoe Co., 251 S.E.2d 52, 53 (Ga. Ct. App. 1978) (known risk of slipping and falling while wearing newly purchased shoes).

263. 173 Cal. Rptr. 20 (Cal. Ct. App. 1981).

264. *Id.* at 23; *accord* Harris v. Karri-On Campers, Inc., 640 F.2d 65, 76 (7th Cir. 1981) ("explosive nature of propane gas, however, was not danger about which Karri-On had a duty to warn. The gas line system of the camper, not the gas, is the defective product").

> that fact does not require a special warning. Use of natural gas is not an activity the danger of which is not known by a substantial number of people. To the contrary, natural gas has been in use for generations for lighting, cooking, heating, and providing energy. The use of any product can be said to involve some risk because of the circumstances surrounding even its normal use. Nonetheless, the makers of such products are not liable under any theory, for merely failing to warn of injury which may befall a person who uses that product in an unsafe place or in conjunction with another product which because of a defect or improper use is itself unsafe. This is especially so where the risk is commonly known.[265]

Likewise, the common knowledge of the flammability of gasoline was clearly implicit in the holding that a paint manufacturer is not required to warn that dried paint should not be removed by gasoline near open flame.[266]

Judicial interpretation varies whether a particular danger is so commonly known that it obviates the necessity of a warning. In *Hunt v. City Stores, Inc.*,[267] plaintiff, a twelve-year-old boy caught his foot between an escalator and the side panel of the escalator. The particular risk or hazard of wearing rubber soled shoes on an escalator was not common knowledge that would release the manufacturer of the duty to warn.[268] In *Shuput v. Heublein, Inc.*,[269] the propensities of "bubbly wine" was not deemed a matter of such common knowledge as to be established as a matter of law. The manufacturer and distributor of champagne were required to warn of the potential danger of spontaneous ejection of the bottle cap resulting from the pressure of gases within the bottle.[270]

It is important to note that, while certain general dangers may be matters of common knowledge for which there is no duty to warn, there may be other dangers closely related to the general danger for which there is a duty to warn. For example, while the danger of explosion associated with dynamite is commonly known,

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265. Garmen v. American Clipper Corp., 173 Cal. Rptr. 20, 23 (Cal. Ct. App. 1981).

266. *See* Johnson v. Jones-Blair Paint Co., 607 S.W.2d 305, 306 (Tex. Civ. App. —Eastland 1980, writ ref'd n.r.e.). It is likewise common knowledge that a nightgown will burn if exposed to an open flame and alleviates the necessity for providing a warning. Brech v. J.C. Penny Co., ___ F. Supp. ___ (D. S.D. 1982).

267. 375 So. 2d 1194 (La. Ct. App. 1979).

268. *Id.* at 1196.

269. 511 F.2d 1104 (10th Cir. 1975).

270. *Id.* at 1106.

the latent danger in the manner of lighting the dynamite safety fuse may require a warning.[271] Each unreasonably dangerous hazard associated with a product must be scrutinized to determine whether the particular danger, indeed, is obvious even to those who are not particularly knowledgeable.

C. Common Knowledge Within the Product User's Trade or Professions

A product that is marketed to a group or a class possessing a special knowledge, sophistication or expertise of the dangerous characteristics of a product require no warning.[272] In *Huff v. Elmhurst - Chicago Stone Co.*,[273] a construction laborer instituted suit against a concrete manufacturer to recover for burn injuries sustained when liquid concrete splashed on his clothing and inside his boots. The manufacturer was not obligated to warn of the danger of liquid concrete burns, which was a well known hazard within the construction industry.[274] Similarily, in *Martinez v. Dixie Carriers, Inc.*,[275] the Fifth Circuit concluded that a warning of a danger commonly known by the trade of which the plaintiff was a member was unnecessary. The court noted that the chemical Hytrol-D was distributed only to industrial users and the manufacturer was entitled to rely on the professional knowledge and expertise of those reasonably expected to use the product. Knowledge of the danger and risk of harm that would be communicated by a warning is chargeable to the user as a member of the knowledgeable group.[276]

In *Lockett v. General Electric Co.*,[277] the court determined there was no duty to warn of an unguarded shaft to a shipbuilder en-

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271. Cooley v. Quick Supply Co., 221 N.W.2d 763, 771 (Iowa 1974).

272. *See, e.g.*, Strong v. E.I. Du Pont De Nemours Co., 667 F.2d 682, 687 (8th Cir. 1981) (no duty to warn gas company that compression couplings could pull out); Martinez v. Dixie Carriers, Inc., 529 F.2d 457, 464 (5th Cir. 1976) (manufacturer relieved of duty to warn of dangers associated with handling product such as Hytrol-D when individuals harmed were experienced professionals in the field of stripping and cleaning tools); Suchomajcz v. Hummel Chem. Co., 524 F.2d 19, 26 (3d Cir. 1975) ("duty to warn does not rise if user is knowledgeable in the handling of the product"); *contra*, Frazier v. Kysor Indus. Corp., 607 P.2d 1296, 1300 (Colo. Ct. App. 1980).

273. 419 N.E.2d 561 (Ill. App. Ct. 1981).

274. *Id.* at 567.

275. 529 F.2d 457 (5th Cir. 1976).

276. *Id.* at 467.

277. 376 F. Supp. 1201 (E.D. Pa. 1974).

gaged in cleaning the ship's drive shaft.[278] Similarly, in *Tri-State Ins. Co. v. Fidelity & Casualty Ins. Co.*,[279] the danger of split rim wheels exploding when the tires were being inflated was a matter of common knowledge within the occupation in which the plaintiff practiced. All parties to the lawsuit were associated with automotive repair in some capacity and normal practice contemplated the use of a cage or chains when inflating a tire on a split rim. The essence of the duty to warn is the need to convey unknown risks of dangers to the ultimate users. When this information is within the specialty area, sophistication or expertise of a particular user or group of users no duty is invoked.[280] It would indeed represent an idle gesture to warn individuals who already possess the knowledge.

The mere fact, however, that an ultimate user possesses a generalized expertise or sophistication about the product may not always control. In *Billiar v. Minnesota Mining & Mfg. Co.*,[281] plaintiff was burned when she inadvertently brushed her face with her hand that was contaminated by a caustic chemical resin. The adequacy of warning of the dangerous propensity of the resin that was mixed with the compound constituted a fact issue and could not be determined as a matter of law. The knowledgeable or sophisticated user exception was deemed inapplicable to an employee who had only ten months experience and was not considered to possess any expertise of the specific characteristics and constituent elements of caustic chemicals. The sophisticated user exception may not be evaluated in a vacuum. It may be analyzed and applied only in light of the degree of expertise by the user.[282]

This exception is likewise inapplicable, and thus a warning is deemed necessary even to experienced trade professionals, where the particular risk posed by the product contradicts the special knowledge possessed by the experienced worker. As an example, in

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278. *Id.* at 1208-09.

279. 364 So. 2d 657 (La. App. 1978).

280. *Id.* at 660; *accord*, Strong v. E.I. Du Pont De Nemours Co. Inc., 667 F.2d 682, 687 (8th Cir. 1981); Fierro v. International Harvestor, 179 Cal. Rptr. 923, 925 (Cal. Ct. app. 1982).

281. 623 F.2d 240 (2d Cir. 1980).

282. *Id.* at 244. The knowledgeable user exception has not been applied to lay individuals even though they may possess some familiarity with the product and its propensities. *Id.* at 244. Even as to individuals possessing an expertise, the extent of that expertise must be evaluated. Ionmar Compania Naviera, S.A. v. Olin Corp., 666 F.2d 897, 904 (5th Cir. 1982).

Pearson v. Hevi-Duty Elec.,[283] plaintiff's husband was fatally electrocuted while testing a new 7200 volt transformer. The electrical system of this particular transformer was energized with the fuse switch in an open position. The original manufacturer of the component had attached an adhesive label to the fuse which stated: "WARNING; FUSE OR SWITCH MAY BE LIVE IN OPEN POSITION." The defendant, assembler-manufacturer and seller of the transformer, removed the adhesive and attached the following warning: "HIGH VOLTAGE, DO NOT TOUCH" and HIGH VOLTAGE, REMOVE WITH HOTSTICK." Noting the misleading nature of the warning to an experienced electrician, the court stated:

> . . . [W]e have testimony from the electrical crew and some of the expert witnesses that the switching assembly in the transformer in question was unique. None of the crew with Pearson had worked on such a transformer. It is undisputed that Pearson and the crew knew that electricity of 7200 volts was present in the transformer and that such a situation required careful attention while working therein. The general warning: 'HIGH VOLTAGE, DO NOT TOUCH,' which HDE substituted for the MGE recommended warning admittedly failed to inform Pearson of the unique characteristic of the fuse switch being 'live' in the open position . . . . It is without dispute that the warning on the fused switch made no mention of it being live in the open position. It would appear that Pearson's electrical expertise was sufficient to warn him that the fuse switch would be live in the closed position. Likewise, his past training would lead him to believe that the fuse switch would be dead in the open position. It would require a specific warning in clear language to change his evaluation of the fatal danger that confronted him. We hold that HDE's general warning failed to convey to Pearson the specific danger and was therefore inadequate.[284]

Similarly, a repairman unfamiliar with a particular danger posed in repairing components within the product is entitled to an adequate warning.[285]

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283. 618 S.W.2d 784 (Tex. Civ. App.—Houston [1st Dist.] 1981, writ ref'd n.r.e.).

284. *Id.* at 788-89.

285. *See* Hamilton v. Motor Coach Indus., Inc., 569 S.W.2d 571, 576 (Tex. Civ. App.—Texarkana 1978, writ ref'd n.r.e.). The court stressed that the plaintiff, despite his experience as a repairman, was not acquainted with the particular apparatus and the hazards of performing repairs on components that were hidden and enclosed within the cylinder. *Id.* at 577. This rationale was applied by the court in Fiorentino v. A.E. Staley

A somewhat unique approach was adopted in *Marchant v. Lorain Division of Koehring*.[286] An experienced crane operator received injuries when the crane "double blocked" and the bucket in which he was riding crashed to the ground. The crane operator was generally aware of the possibility of double blocking through his experience in his trade. Nevertheless the manufacturer was impressed with the duty to warn, in the absence of evidence that the plaintiff was cognizant of this particular crane's tendency to double block.[287]

D. Modification of the Product

A manufacturer is not obligated to warn of the dangers inherent in a product that has been altered or modified by the user without approval of or consultation with the manufacturer.[288] In *Talley v. City Tank Corp.*,[289] plaintiff, an employee of the sanitation department of the City of LaGrange, was working on a garbage truck that had been manufactured by the defendant and assembled and sold to the city by Service Systems, Inc. The truck had originally been designed and equipped with a rear lifting and loading system but the city found it necessary to modify the lifting system on its garbage trucks in order to accomodate the design of its trash containers. Affirming a summary judgment for the manufacturer, the court declared:

> We hold there is no duty to warn that a redesign and replacement of an integral and ultimately injurious component of a product will destroy the original design and may result in an essentially different product with new 'dangerous propensities.' The consumer's conscious decision not to use the product as it was originally manufactured and designed creates a danger readily apparent even without a warning. An 'obvious' danger of totally redesigning and replacing an

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Mfg. Co., 416 N.E.2d 998 (Mass. App. Ct. 1981) in holding a warning given to professional carpenters was too oblique to alert the user to the specific risks in using a highly flammable adhesive cement. *Id.* at 1004. But in Clayton v. General Motors Corp., [1981-1982 Transfer Binder] PROD. LIAB. REP. (CCH) ¶ 9170 (S.C. 1982), the South Carolina Supreme Court rejected a duty to warn a mechanic to avoid overtorquing a lugbolt.

286. 251 S.E.2d 189 (S.C. 1979).

287. *Id.* at 192.

288. *See* Rodriguez v. Besser Co., 565 P.2d 1315, 1320 (Ariz. Ct. App. 1977); Thornhill v. Black Sevalls & Bryson, Inc., 394 So. 2d 1189, 1192 (La. 1981).

289. 279 S.E.2d 264 (Ga. Ct. App. 1981).

> integral component of a product to facilitate the consumer's own individual particularized use of the product is that elimination and replacement of the manufacturer's original design may result in an instrumentality which will be unsafe for the consumer's purpose. There is no duty to warn of the obvious danger of using a manufacturer's product as the mere foundation from which a redesigned instrumentality will be produced. In such circumstances, "[i]t was instead the duty of the person reusing [the product] to make it safe for the purpose for which he intended to use it. In effect, [the manufacturer] had no duty to protect the [consumer] against such an intervening cause."[290]

The effect of subsequent product alteration was likewise applied in the recent case of *Hollinger v. Wagner Mining Equipment Co.*[291] The decedent, an iron miner, was struck and killed by a scooptram, a diesel powered vehicle used to transport materials in underground mines. The scooptram was originally marketed by the manufacturer with an audible warning device to alert workers of its presence in the area, but the horn system had been removed prior to the accident by the decedent's employer. The court observed that removal of the horn by the employer substantially changed the scooptram and foreclosed any further duty on manufacturer to provide additional warnings.[292]

Similarly, in *Temple v. Wean United, Inc.*,[293] substantial modification of a power punch press was accomplished by the plaintiff's employer. The court stated that "[T]he obligation that generates the duty to warn does not extend to the speculative anticipation of how manufactured components, not in and of themselves dangerous or defective, can become potentially dangerous dependent upon the nature of their integration into a unit design and assembled by another."[294]

In *Shawver v. Roberts Corp.*,[295] plaintiff was injured when the conveyor manufactured by defendant was mistakenly activated by a fellow employee. The original manufacturer was not obligated to warn since plaintiff's employer had installed the specific controls of

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290. *Id.* at 271.
291. 505 F. Supp. 894 (E.D. Pa. 1981).
292. *Id.* at 900-01; *see also* RESTATEMENT (SECOND) OF TORTS § 402A(1)(b) (1965).
293. 364 N.E.2d 267 (Ohio 1977).
294. *Id.* at 272.
295. 280 N.W.2d 226 (Wis. 1979).

the conveyor that caused the injury. The conveyor was sold without a control system and it was understood between the manufacturer and the industrial purchaser that the conveyor was subject to further processing.[296]

A duty to warn may arise if the manufacturer or product supplier can reasonably anticipate that a product will change and become unreasonably dangerous through regular use or predictable deterioration.[297] This relates to the obligation of the product supplier to know and to reasonably anticipate the use and environment of use of a product. A kindred concept concerns the supplier's duty to warn of dangers resulting from the removal and replacement of a component part during maintenance or servicing of the product. In *Stewart v. Scott-Kitz Miller Co.*,[298] the user of a forklift instituted suit against the manufacturer for injuries arising when the lift apparatus malfunctioned. The malfunction occurred because certain bolts were replaced backwards during the course of routine maintenance of the machine performed by plaintiff's employer. The necessity for removing the bolts during routine maintenance and the possibility of the bolt being replaced backwards was entirely foreseeable when the forklift was designed and manufactured.[299] Consequently, the manufacturer was obligated to post clear and adequate warnings on the equipment advising maintenance personnel as well as users concerning the consequences of incorrect insertion of the bolts. And in *Bich v. General Electric Co.*,[300] the court recognized the duty to warn where a component was replaced with a similar component part supplied by a different manufacturer. Plaintiff, an electrician, replaced a GE fuse housed in a GE transformer with a fuse manufactured by Westinghouse, and an explosion occurred. Both fuses were labeled with the same voltage and were the same length, but the Westinghouse fuse was slightly larger in diameter. A duty to warn users not to substitute fuses with those of another manufacturer was required.[301] The

296. *Id.* at 232.

297. *See* Hamilton v. Motor Coach Indus., Inc., 569 S.W.2d 571, 576 (Tex. Civ. App.—Texarkana 1978, writ ref'd n.r.e.).

298. 626 P.2d 329 (Okla. Ct. App. 1981).

299. *Id.* at 330.

300. 614 P.2d 1323 (Wash. Ct. App. 1980).

301. *Id.* at 1328. The court observed, "It would have been a simple and inexpensive matter for G. E. to have included on its fuses a warning not to substitute fuses or to have

duty to warn continues to depend upon the foreseeable manner and environment of use of each product. Excessive dangers of significant magnitude preventable by appropriate warnings or instructions for safe use determine the parameters of the product supplier's duty.

VIII. CONCLUSION

Strict tort liability encompasses marketing defects that render a product unreasonably dangerous. This includes the failure to warn, the failure to warn adequately and/or the failure to furnish directions and instructions for safe and efficient use of a product.

The application of strict tort liability to the marketing area has proved to be the most troublesome of the three types of defects embraced by Section 402A of the Restatement. Logically, the concept of warning falls within the aegis of negligence and not strict tort liability. An analysis quickly discloses that the conduct of the manufacturer is of critical importance in determining whether a warning or instructions should accompany a product to the ultimate user. It is submitted that the extension of strict tort liability to encompass the marketing cases is neither contemplated nor warranted under the socioeconomic rationale that undergrids Section 402A.

Perhaps most importantly, the courts must adopt a reasonable approach to the theory of warning defects under strict tort liability. Several jurisdictions have already extended Section 402A to the point of imposing absolute liability on the product supplier. Strict tort liability, however, was never intended to eliminate the tort nature of this reparations doctrine and to create a judicial form of insurer protection against product related injuries.[302] A

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given information regarding the time-delay characteristics of its fuses." *Id.* at 1328. A similar approach was adopted by the court in Pearson v. Hevi-Duty Elec. Co., 618 S.W.2d 784 (Tex. Civ. App.—Houston [1st Dist.] 1981, writ ref'd n.r.e.). A warning on a transformer "HIGH VOLTAGE, DO NOT TOUCH" substituted for an original warning on a fuse "WARNING—FUSE OR SWITCH MAY BE LIVE IN THE OPEN POSITION," was not only deemed inadequate but, as to a trained electrician, misleading of the danger confronting the workman. *Id.* at 785.

302. *See* Little, *Products Liability—The Growing Uncertainty About Warnings*, 12 FORUM 995, 1011 (1977). As noted by Little, "Holding a manufacturer to a standard amounting to a 'burden of clairvoyance which is doubtful the prophetic powers of Nostrodamus could meet' may be tantamount to the imposition of insurer's liability which the manufacturing industry simply may not be capable of withstanding." *Id.* at 1011.

manufacturer should not be permitted to sell a product containing serious operating hazards to an unsuspecting user. Neither should the manufacturer be declared liable for product related accidents attributable to the improper or misuse of a product by the user or some other individual. A rational balance is imperative and the unrealistic imposition of liability based on esoteric perceptions of how additional or more graphic warnings could have possibly foreclosed the occurrence of an accident vividly attests to distortions evolving in the warning arena.[303] Allegations of a failure to warn adequately of a particular danger or risk of harm are increasing in product related accidents. Although the manufacturer must approach the marketing of its products responsibly, it seems equally axiomatic that product users should not be excused for the consequences of irresponsible uses of the products because of the alleged absence of a comprehensive litany of every conceivable warning. Reasonable consumer expectations must continue as the governing standard if further distortion of the tort nature of the marketing defect cause of action is to be avoided.

303. For example, in Ziglar v. E.I. Du Pont De nemours & Co., 280 S.E.2d 510 (N.C. Ct. App. 1981), the manufacturer of a crop poison was deemed liable for an inadequate warning that proclaimed "DANGEROUS—POISON" and which was accompanied by several red skull and crossbones on the product container. The court concluded that the manufacturer should have added a coloration to the liquid to insure that it would be completely distinguishable from water. The question may be posed: if the manufacturer added orange coloration, should it then warn that the liquid is not tea or an orange drink? If a yellow coloration, should the manufacturer warn that the liquid is not Gatorade? Legal duties should be predicated on realistic considerations. *Id.* at 515-16.