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Hanover Risk Solutions

Design Defects

Design defects occur when a product is inadequately planned in such a way as to pose unreasonable hazards to product users. The basis underlying this theory of defect is that the product manufacturer should have adopted a different design that would have reduced the risk of accidental injury. Unlike production defects, which only apply to products that deviate from established manufacturing requirements, design defects will apply to an entire product line that is built in conformance with the flawed design. This report provides an overview of the types of design defects commonly encountered, the typical legal theories under which product liability lawsuits alleging defective design are brought, tests used by courts to determine defectiveness, and recommendations for reducing liability for defective design.

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Unlike production defects, which only apply to products that deviate from established manufacturing requirements, design defects will apply to an entire product line that is built in conformance with the flawed design. This can expose a large number of people to a hazard.

This report provides an overview of the basic types of design defects, legal theories under which product liability lawsuits alleging defective design are brought, tests used by courts to determine defectiveness, and recommendations for helping to reduce liability for defective design. This document should not be construed to be offering legal advice. Always consult your legal professional.

Types of Defects

In general, two broad types of design defects can be distinguished. These are:

- Inadvertent design errors
- Conscious design choices

Inadvertent design errors are those that result because the designer failed to adequately appreciate the implications of the various design elements or to employ commonly understood and accepted engineering techniques of safe product design. These types of design errors are similar to manufacturing errors because they may be measured against a built-in objective standard or norm of proper conduct. Common types of inadvertent design errors include specifying a material or component that was inadequate for the product or failing to identify a concealed hazard in the product.

Design errors involving conscious design choices result from the product designer's decision to accept the risks associated with the intended design in exchange for

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increased product utility or reduced costs that the designer believes justify conscious acceptance of the risks. These cases are more difficult to assess because the defect cannot be judged against an objective measure of defectiveness. Instead, it must be judged based upon the surrounding circumstances at the time the product was manufactured and whether a reasonably prudent manufacturer would have acted the same way. Common types of design errors resulting from conscious design choices include failing to provide a needed safety device or to provide necessary warnings or instructions.

Theories of Liability

Design defect cases may be brought as negligence, strict liability, or warranty cases. In general, under negligence theory, the court will evaluate whether the manufacturer exercised reasonable care in the adoption of a safe plan or design for a product. Under contract theories, the court will evaluate whether the manufacturer breached an express or implied warranty regarding the fitness or suitability of the product to the product user. Under strict liability theory, the court will evaluate whether the product itself was in an "unreasonably dangerous condition," irrespective of the conduct of the manufacturer.

Tests for Defectiveness

The determination of defectiveness is very complex, and there is no single rule that applies to all cases. Jurisdictions vary widely in the specific tests used, and within a jurisdiction, these tests may vary depending upon the legal theory under which the case is brought or the type of product involved.

In general, courts use one of three tests for determining if a product is defectively designed. They are:

- Risk-Utility Analysis
- Consumer Expectation
- Combination of the two tests.

Risk-Utility

In a risk-utility analysis, the court will balance the likelihood of harm against the benefits of taking precautions against the harm. If the likelihood of harm outweighs the benefit, the manufacturer will be found liable. This test is followed by a majority of jurisdictions and was adopted by the *Restatement (Third) Products Liability*.

Factors that courts have considered include:

- The usefulness and desirability of the product to the user and the public as a whole.
- The likelihood that the product will cause injury and the probable seriousness of the injury.
- The manufacturer's ability to eliminate the unsafe character of the product without impairing its usefulness or making it too expensive to maintain its utility.
- The user's ability to avoid the danger by the exercise of care in the use of the product.
- The user's anticipated awareness of the danger inherent in the product and the avoidability of such danger, because of general public knowledge of the obvious condition of the product or of the existence of suitable warnings and instructions.
- The state of the art at the time that the product was manufactured.
- The feasibility of the manufacturer spreading the loss by setting the price of the product or carrying liability insurance.

The specific tests followed will vary depending upon the court. Some courts may focus on one or more particular factor, while other courts may look at the totality of the factors.

Consumer Expectation

Under a consumer expectation analysis, a product will be found defective if it is does not meet the reasonable expectations of an ordinary consumer as to its safety. The test has its roots in the warranty remedies of contract law and is analogous to the Uniform Commercial Code's warranty of fitness and merchantability.

A commonly referred to statement of the test comes from *Restatement (Second) of Torts*, §402(A), comment (l). This states that a product is in defective condition when: "The article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer that purchases it, with the ordinary knowledge common to the community as to its characteristics."

The test is objective. A court will look to the expectations of the ordinary person who uses the product rather than the individual plaintiff or the public in general.

Under the traditional statement of the test, there is no recovery for generally known danger. Some courts have broadened the scope of liability by being very reluctant to find that a risk is generally known or obvious. This is done by evaluating whether the specific accident scenario was obvious to the consumer rather than whether the general risk of the product was obvious.

A small number of courts use this test as the primary test for defect. Others restrict this test for manufacturing defects only. Some jurisdictions use the test as an alternative test to the risk-utility analysis.

Combination

In a combination analysis, a court may find a product defective if it fails to perform as safely as could be reasonably expected or if the risk of design outweighs the benefits. The leading case in this area is *Barker v. Lull Engineering Co.*, 20 Cal.3d 413. As a result, this test is commonly referred to as the *Barker* test.

Under Barker, a product may be found defective in design if either the plaintiff establishes that the product failed to perform as safely as an ordinary consumer would expect when used in its intended or reasonably foreseeable manner, or the plaintiff demonstrates that the product's design proximately caused his injury and the defendant fails to establish that, on balance, the benefits of the challenged design outweigh the risk of danger inherent in such design. The test expands the scope of liability in two ways. First, by making the test an "either-or" test, a plaintiff can recover if the product fails either test. Second, the test shifts the burden of proof for the risk-utility analysis to the manufacturer.

Loss Control Recommendations

The primary loss control recommendations for preventing product defects are to take steps to ensure that product safety is evaluated in the design of the product, and that specific steps undertaken to evaluate and address potential product safety hazards are well documented.

Product Safety in Design

Organizations designing products should:

- Ensure that technical specifications take into account product safety.
- Ensure that products comply with all applicable safety standards and regulations.
- Perform hazard analyses on potential product designs using accepted hazard assessment techniques (e.g., failure modes and effects analysis or fault tree analysis)
- Conduct formal, systematic, and critical design reviews at prescribed intervals throughout the product development process to reevaluate product designs.
- Address any safety concerns identified by hazard analyses or design reviews.
- Control design changes that occur.

Documentation

Product safety activities during product design should be well documented. The documentation should be able to demonstrate the formal activities performed by the organization to address product safety. In addition to identifying the specific activities that occurred, the documentation should also substantiate why actions occurred, for example, why one design solution was chosen over another. Documentation should be maintained in accordance with company document retention policies.

Additional Information

See Product Design Reviews on Hanover's Risk Solutions website for more specific loss control recommendations regarding product design.

References

1. 63A Am. Jur. 2d, *Products Liability: Design Defects* §§ 930-1107 (2000).
2. *Design Defects*. Prod. Liab. Rep. (CCH) 1090, 1700 (2001).
3. D. Owen, et al. *Products Liability and Safety, 3rd ed*. Westbury, NY: The Foundation Press, 1996.

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