

PRODUCT LIABILITY

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Abstract

The objective of this Interactive Qualifying Project was to gain an understanding of Product Liability as it pertains to engineers. The methods we used to study Product Liability were to first research the law and then apply it to three test cases. The conclusion we arrived at was that engineers play a crucial role in the litigation process as expert witnesses. Any design engineer must be cognizant of the implications that small decisions create.

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Introduction

In this Interactive Qualifying Project product liability intricacies will be investigated. Two books, Engineer in the Courtroom and Products Liability in a Nutshell will be used as our introduction to this legal area. After doing so, application will be made to actual cases that have been tried in court. The three product liability cases will be analyzed. The first case involves an individual auto-repair shop owner and a big lift-manufacturing corporation. The second case involves a dispute between two large manufacturing companies. The third case involves a three-way lawsuit. The first part is a press operator vs. a press-manufacturing company, and the second is a press-manufacturing company vs. a printing company. The court files will be studied and our judgement will be rendered.

Chapter 1

An Engineer in the Courtroom

1.1 Introduction

Product liability remained an intangible concept previous to reading the book An Engineer in the Courtroom, by William J. Lux. The book explains not only what product liability consists of, but also how engineers are involved in such situations. The points of which this book ensures increased understanding are: avoid litigation altogether, know what leads to litigation, understand what accidents are and how they are caused, learn something about the litigation process, realize the importance of decisions made by an engineer, be aware how the engineer can assist the attorney, and finally, know what to expect during different phases of the process and how an engineer should conduct himself.

1.2 The Nature of Accidents

Most of the lawsuits that involve products are concerning accidents. An accident as defined by Mr. Lux is “an occurrence that is unexpected, and an occurrence that causes loss or injury, which can be expressed in some form of economic terms.” This definition does not seem to be limiting, but allows for the several considerations. The following is an almost exhaustive list of possible accidents:

I. Collisions

- a. two moving machines or vehicles
- b. a vehicle or machine hitting a fixed object

1. parked car or stopped machine
2. airplane crashes
- c. vehicle hitting person
 1. person running into a moving machine
- d. person running into another person

II. Slip and Fall accidents

- a. loss of traction between foot and the surface
- b. tripping
 1. scuffing
- c. physical malfunction of the person
 1. dizziness
- d. unexpected change in surface level
- e. loss of step support
- f. loss of balance and/or support of the body
- g. fall from ladder or step

III. Loss of control

- a. inadvertent motion

IV. Hit by Falling Object

- a. rolling object

V. Suffocation

- a. drowning

VI. Electrocution

VII. Poisoning

VIII. Shock and vibration

IX. Entanglement

X. Cuts and abrasions

XI. Fire

- a. chemical burns
- b. explosion
- c. radiation
- d. burns from contact with hot surface

XII. Mechanical Failure

XIII. Stuck by moving projectile

- a. firearms and other related items
- b. war

XIV. Natural or Environmental Factors

- a. heat
- b. cold
- c. lack of water
- d. animal attacks
- e. wind
- f. lightning

XV. Homicide

- a. suicide
- b. legal intervention

XVI. Other possibilities exist, no list is complete

All these are accidents, which means that they were not intended, but each one of them can cause injury or economic loss.

1.3 Why Go to Court?

Every citizen in the United States has a right to sue. Litigation system consists of filing a suit, naming claims, arriving at a settlement or going to trial. We use this process to settle disputes in our society. Law suits occur when the relationship between two or more parties becomes unbalanced. When an accident occurs, involving some product, the manufacturer is often sued. Engineering experts can be called into the courtroom by both plaintiff and defendant parties. They use their technical skills to analyze the case, and then prove or disprove that the manufacturer of the equipment is at fault.

1.4 Avoiding Litigation

In order to avoid litigation, manufacturers must design their product with safety in mind. There are several guidelines that can help manufacturers escape the lawsuits if they are followed.

I. Avoid the Accident

- ◆ Engineers must eliminate the hazards in their design.
- ◆ Users must take steps to move safely through the potential accident condition.

II. Protect From Accident

- ◆ Manufacturers must provide guards on their product to cover the places where an accident can take place.

- ◆ Users must keep untrained people away from the work site.

III. Make the Accident Safe

- ◆ Design the machine so even if the accident happens no one will get hurt.
- ◆ Use Roll Over Protection System.

IV. Warn of an Impending Accident

- ◆ Install buzzers or lights that warn of a possible hazard.

V. Warn of the Possibility of an Accident

- ◆ Operator or worker is informed that a hazardous condition can exist under certain circumstances through stickers and decals.
- ◆ Provide instructions in Operator's Manual, safety manuals, and training lessons.

VI. Protect the Operator From the Accident if it Should Happen

- ◆ Safety devices such as seatbelts and airbags should be installed to protect the operator when the accident cannot be avoided.
- Designers follow several objectives when working on a development of a new product. They are specifications, performance, life, reliability, serviceability, costs, and safety. Sometimes the emphasis is put on the first five points, rather than on safety. In order not to get sued, safety requirement should be considered to be just as important.

1.5 The Litigation Process

The courtroom has a basic set of procedures that, without fail, are followed. It can be a long and drawn out process, but all is necessary to ensure a fair trial. The first component of litigation is the claim. It consists of a summons and a complaint, or the reason for going to the judicial system. The second portion is the response and defense, or answer to the claim. The last part is the discovery process, consisting of interrogatories, requests for production, requests for admissions, inspections, depositions, and the actual trial.

1.6 Engineers and Engineering Information

Engineers are important in the litigation process because they understand how the product came into fruition. The engineer who worked on the product knows best what decisions were made and why. He also has vast knowledge about the final debugging and testing. Engineers can provide blueprints and records, and also give technical analysis of such material. There are two basic types of people who are helpful in giving testimony. They are a fact witness and an expert witness. Both can be used by either side to present testimony, aiding one side of the case. An expert witness, however, can give both facts and opinions whose weight has to be determined by the judge or jury. Sometimes there is no information at all or certain key facts are unknown. This can occur from losing evidence, or just from inability to obtain it. In these situations the lawyers must do what they can to work around the lack of information by finding alternative methods.

1.7 How the Engineer Can Help the Attorney

An engineer and an attorney may not always agree, but through extended communication lawyers pick up on important aspects of the case that an engineer probably overlooked. The main role of an engineer is to do a quality explanation. Below is a listing of several ways than an engineer can be helpful to an attorney.

- I. An engineer knows the design and development process, therefore, he can describe the technical processes and methods used in designing and in making design choices between two or more possibilities. He plays a role of an expert witness, the purpose of whom is to help the court and the jury to understand information and matters not generally understood by an average juror.
- II. An engineer can explain products, systems, parts, and operation of the machine. He has to translate it into terms, simple enough for attorneys and jury to understand.
- III. An engineer can talk about how a product is developed, evaluated, and tested. A jury is likely to be convinced if detailed test results of a product are presented and explained.
- IV. An engineer can tell the attorney about a successful product and why it is successful. Understanding the reasons for product's success or failure becomes important when you are defending a good product or attacking a bad one.
- V. An engineer can also test or analyze to provide evidence for resolving technical questions. He must be able to answer to the attorneys' questions about operation of the product.

- VI. An engineer is familiar with uses and applications of a product. He can tell when the product was not used as it was intended to.
- VII. An engineer is technically equipped to conduct accident reconstruction. Good physics, mathematics, technical, and analytical skills are needed for a successful reconstruction. Engineers usually possess all those qualities.

Many other ways of how an engineer can be helpful in a courtroom can be added to this list. The bottom line remains that in almost any case where technology is involved, an expert engineer should be consulted for the most fair and just outcome.

1.8 The Discovery Process

The discovery process is a legitimate process for an opponent in a lawsuit to discover information that is permitted by law to be found and possibly used in the matter being litigated. Below there are three ways of obtaining this information.

- I. Interrogatories are sessions, where a witness is asked a series of questions, often questions with already known answers. Some examples of such questions are :
 - ◆ When was the machine designed?
 - ◆ What is the history of accidents on the model?
 - ◆ What is the service history of the machine?
 - ◆ What kind of testing was done on the model?
- II. Request for Production Documents can be used as another source to obtain information about a case. Such documents are used when more detailed information is required. Some of these sources can be:
 - ◆ Operator's manuals

- ◆ Parts books
- ◆ Service and technical manuals.
- ◆ Specification sheets

II. Request for Admission is used to put an emphasis on some point an attorney tries to make. A witness is asked to admit that a certain statement is true.

1.9 The Deposition

A deposition is a step in a discovery process where a witness is questioned under oath outside a courtroom. A deposition can have several different purposes, depending on a person who is being questioned. This can be to get an expert witness' opinion, to impeach a witness, or to pin down a testimony. Often a lawyer will ask a trick question in order to get a witness to admit something he normally wouldn't. A set of rules has been defined for giving a successful deposition.

- ◆ Listen to the question
- ◆ Pause before you answer a question
- ◆ Answer only the questions asked
- ◆ Answer truthfully and completely to the best of your ability
- ◆ Don't volunteer information
- ◆ Don't argue or advocate

1.10 The Trial

A trial is the last step in the litigation process. During the trial a final decision is made by the judge and jury, therefore maximum preparation is required. The trial process can be broken down into eight parts.

- I. Picking a Jury
- II. Opening Statements
- III. Plaintiff Presents his Case
- IV. Defense Presents his Case
- V. Final Arguments
- VI. The Charge to the Jury
- VII. Jury Deliberation
- VIII. Verdict

Some of the people who are always in a courtroom during the trial are judge, court clerk, court reporter, marshal, and jury. The judge is in charge of the court. When going on trial the dress code is very important. Suit and tie should be worn to make a person look more business-like. This is especially important for an expert witness whose credibility is often questioned. There are two parts to each person's testimony during the trial: direct examination and cross-examination. During direct examination a witness is questioned by an attorney on his side. It is a common practice to rehearse the questions and answers before the trial. In a cross-examination an opposing lawyer gets a chance to ask questions. He might try to get you to admit you didn't tell the true story, that you had flaws in your testimony, or even impeach you by presenting other evidence to disprove your testimony. The way a witness words his answers during cross-examination is very important. A witness is not permitted to be in the courtroom when the verdict is being announced. An attorney lets him know the outcome after the trial is over.

Like other parts of the trial that are important on uncommon levels, the questions that are posed and the answers that are given also have some guidelines.

- I. It is never wise to make cute answers; a question should be handled professionally.
- II. Whenever possible, explain things in the simplest way, so as to allow a better grasp of the material by the jury/judge.
- III. Do not assume that you have the same definition for things. Clarifying questions makes it easier to communicate.
- IV. Do not accept a different definition of a term/phrase that is not the commonly accepted one.
- V. Agree politely on a well-formed definition.
- VI. Physical qualities should be specified and not be vague.
- VII. Do not pontificate.
- VIII. Do not argue.
- IX. Limit the use of questions to only those situations of clarification.
- X. Do not repeat your answers.
- XI. If you cannot answer a question, say so. Do not go around the question.
- XII. Try not to give obviously planned answers.
- XIII. Do not show signs of ill-temperedness or tiredness.
- XIV. Avoid statements of absolute certainty, i.e. "I am positive it was at noon on Friday, the thirteenth"
- XV. Politeness is key, but not excessiveness.
- XVI. Acting will get you nowhere on the witness stand
- XVII. It is not poetry when you are testifying, so do not use excessive adjectives or unnecessary descriptions.

These guidelines are general and serve as a basis for anyone going to trial. However, as everything else in life, every court is different and there may be other standards established by the judge/type of court. Be attentive to such things and comply accordingly.

When you are done testifying the judge will ask you to step down. It is best to leave, unless the judge asks you to stay for further questioning later, your attorney asks you to stay in the courtroom, or you have other business in the case(defendant etc.) Whether you stay or leave, be courteous and quiet and do not discuss the case until it is done. After the trial is done you will probably find out what the outcome was from someone involved or in the news. This is a good opportunity to ask the attorney who called you to testify to review your testimony. He can tell you how well you did, as well as suggest some improvements to consider in the future. It is a good learning experience.

1.11 Questions

Questions should always be answered truthfully but there are still different types of questions and ways they should be answered. There is a difference between simple inquiries that are just informative, and questions in situations of legal binding. Such situations are deposition and testimony in a courtroom, where lying is considered perjury and mandates penalties that most people would rather avoid.

The general grouping of questions

I. Specific or General

General questions are broad in apparent interest where the answer should also be broad. Specific questions limit the scope to a particular place or time etc. and should be answered in detail.

II. Open or Closed

Open-ended questions ask for detailed or narrative answers.

Close-ended questions, by their form and nature, ask for more brief answers.

III. Leading or Non-Leading

A leading question suggests the answer and is intended to limit and control the answerer. Non-leading questions leave the answer entirely up to the answerer.

IV. Formal or Casual

A formal question is one asked in a formal document such as an interrogatory or deposition/trial. Casual questions are asked in casual settings and are of little importance.

V. Rhetorical or Interrogating

A rhetorical question does not expect an answer. Interrogatory questions are simply asking something important and looking for an answer.

VI. Simple or Complex

Simple questions are just easier to answer. The way to identify a complex question is by its complex grammatical format. Also, many added conditions to a question can be a clue that it is complex.

VII. Probing or Outlining

Probing means that the question is simply looking for answers.

The outlining question tries to get the answerer to paint a story in a memorable way for the jury.

People that question you outside of the attorneys in the case, should be told that their question shall not be answered. It is not advantageous to answer questions unless you direct them towards an attorney. Also giving the attorney enough time to formulate the question properly is important. This ensures that the person on the stand knows where the attorney is coming from and a good exchange occurs. Make sure that when you get questioned, you understand that you can take your time. Sometimes you can obtain clues about the question by listening to the way it is phrased. Remember that with emphasis on different words, a sentence can have completely different meaning.

Always answer questions truthfully. Knowing the different types of questions should not affect the truthfulness. Often, there are needs to emphasize certain aspects of an answer though, based on the way in which a question is asked. Voice inflections and repeating phrases make an indelible impression on the jury.

1.12 Accident Reconstruction

The nature of litigation implies disagreement between two or more parties about a sequence of events that affected something adversely. Accident reconstruction is necessary to try and pinpoint more closely the facts surrounding the incident. An extensive search into all plausible areas of information is necessary in order to pick up key details that can lead into other sources of solutions. Evidence can come from

eyewitnesses, the physical system that broke, the paper trail surrounding the accident, and the injured party.

In order to create a believable accident reconstruction, certain guidelines must be adhered to. The laws of physics can never be tampered with, as they are not disputable. The accident reconstruction, determined by your side of the law, has to agree with the majority of evidence and information available. Your explanations should be understandable by a lay person, like someone found on a jury. An expert witness cannot be biased by preconceived notions and ideas. A powerful accident reconstruction must be able to withstand scrutiny of the kind that the opposing legal side will present.

1.13 Definitions and Techniques Employed by Attorneys

As in any profession there is a standard set of terms that need to be understood in order to operate in the field. A short list follows:

- ◆ **Adverse Witness** - a witness called to testify by an opposing attorney.
- ◆ **Answer** - a response to a question
- ◆ **Appearance** - when someone appears in the litigation process
- ◆ **Arbitration/Mediation** - involves a mediator who works with both parties
- ◆ **Balance of Evidence** - information before the jury when they deliberate on the case
- ◆ **Bar** - the association of legal activity or grouping of attorneys in a certain area of jurisdiction.
- ◆ **Bench** - the location, person, and authority of the judge in the courtroom
- ◆ **Best Evidence** - deals with acceptability and admissibility of evidence
- ◆ **Breach** - a failure to perform or a break in a chain of action

- ◆ **Burden of Proof** - the respective responsibilities of the parties in a lawsuit to prove the claims at question
- ◆ **Care** - the responsibility or charge to perform a conduct according to accepted levels of performance
- ◆ **Charge** - the instructions given by the judge to the jury on how to go about deliberation for the specific case at hand.
- ◆ **Civil Law** - the law between people and other entities, excluding the state
- ◆ **Complaint** - the start of the legal process and basis for a court intervention
- ◆ **Due Process** - the right of every individual to have expedient and proper passage through each of the legal steps
- ◆ **Duty** - what one is supposed to do
- ◆ **Evidence** - any information that tends to prove or disprove the disputed facts
- ◆ **Exhibit** - evidence offered and admitted at trial
- ◆ **Expert Witness** - one who by training, education, experience, or other special knowledge has the ability to assist the court and the jury in understanding the technical matters of a case
- ◆ **Facts** - things that have happened or matters that simply exist
- ◆ **Forensic** – belonging to the law
- ◆ **Foreseeability** – applies to the ability to predict an outcome of the future
- ◆ **Good Faith** – the basis for which proper and reasonable execution of duty should be measured
- ◆ **Hearsay** – knowledge obtained through second-hand sources

- ◆ **Hidden Defects** – a defect, not easily detectable, not even by reasonable and/or common inspection of a product or component
- ◆ **Hostile Witness** – by action or demeanor, a person who demonstrates hostile attitude towards the questioner
- ◆ **Hypothetical Question** – only permitted certain times, provides another thought process of a particular aspect of a case.
- ◆ **Impeach** – to show the testimony of a witness to be untrue
- ◆ **Inadmissible** – when an information or evidence is outside the rules governing a specific case
- ◆ **Insurance** – payments collected for the injury
- ◆ **Irrelevant** – not proper or inadmissible under the rules of evidence and under procedures of a specific case
- ◆ **Judicial Discretion** – right of a judge to make a decision where the law does not specifically give a decision.
- ◆ **Jury Trial** – most product liability cases are decided by a jury, however there is an alternative, called bench trial, where the judge decides the outcome
- ◆ **Lay Witness** – simply provides facts
- ◆ **Liability** – defined mainly by responsibility, but also includes legal responsibility to comply with remedies decided by the court
- ◆ **Litigation** – the total process of filing a law suit, pursuing a discovery and pre-trial actions, the trial, and also appeals and other post-trial actions.
- ◆ **Mistrial** – when a judge determines that a fair and proper solution can no longer be reached. The judge ends the case with no result reached.

- ◆ **Negligence** – failure by a party to pursue reasonable obligations
- ◆ **Oath** – the common oath in legal matters is “Tell the truth, the whole truth, and nothing but the truth”
- ◆ **Privileged Communication** – communication generally not discoverable by the other side, generally involving attorney – client privilege.
- ◆ **Proximate Cause** – that cause without which the accident would not have occurred
- ◆ **Prudent Person** – person who lives up to the expectations
- ◆ **Puffery** – the law recognizes that some statements made by a salesperson are exaggerated
- ◆ **Punitive Damages** – intended to punish a grossly negligent plaintiff for wanton disregard for the safety of the plaintiff in the case.
- ◆ **Questions of Fact** – deal with facts or information
- ◆ **Question of Law** – a matter of dispute concerning the applicable statutes or precedents, or a dispute concerning the process and rules of litigation procedure
- ◆ **Reasonable Care** – care that a reasonably prudent person would use in performing work
- ◆ **Red Herring** – diversions from the real issue by introducing some unimportant and irrelevant item.
- ◆ **Side Bar** – when the judge wishes to hear the reasons for or against the objection privately from both attorneys.
- ◆ **Summons** – formal legal document notifying the defendant that an action has been filed against him

- ◆ **Testimony** – the sum of answers to questions asked by attorneys on the witness stand
- ◆ **Tort** – legal wrong committed or perceived to be committed against a person or other legal entity
- ◆ **Warnings** – a complaint or claim can be centered around a warning about a hazard, or lack there of
- ◆ **Weight of the Evidence** – decision to be made on the questions of fact by the jury deal with it.
- ◆ **Work Product** – work of the attorney which he uses to plan and develop his case theories and his method of presentation.

The attorney must ensure that the trial runs smoothly and that the jury walks away with enough knowledge to make an appropriate decision. The attorney should never ask even one too many questions. There comes an appropriate point when it is felt that enough has been obtained from a certain witness. No matter what occurs during a witness' testimony, a lawyer should never fight or argue with someone on the witness stand.

Cross-examination should be kept short and should only occur for the following purposes:

- ◆ To show that the witness has given information that is wrong.
- ◆ To show that the basis of the witness' testimony is bad.
- ◆ To show that the witness has contradicted himself with past statement or actions.
- ◆ To show that the witness is not competent to his testimony.
- ◆ In some other way the witness is not believable.

The answer to a question should always be known before the question is asked, so as to eliminate an unwanted answer. This also eliminates the possibility that the lawyer does not know which way to go with further questioning. A jury consists of normal people that understand things better in the form of a story, so this should be remembered especially when giving closing statements. When a point has been made, then that is the appropriate time to stop and either move on to something else, or to sit down. Continuing on just clouds the point made, or allows the witness to change his/her story.

The answers given by a witness may mean something to the attorney that is not necessarily picked out by the jury, so do not assume that they get the point that your questions are trying to make. Ask clarification questions to ensure everyone is on the same page. Always listen to the answers given because they may not be the ones expected. This will hurt the case and has to be expounded upon. A smooth and successful case can only come about through extensive planning. The more pre-planning that is done, the less rushing around there needs to be done during the trial. Finally, do not try to fool the jury or judge. Say everything straightforwardly and do not bank on tricking anyone.

1.14 War Stories

There are many lessons to be learned from another person's day in court. The story of a seventeen-hour deposition is ridiculous, but has occurred before. This goes to show that a witness should not allow himself to be placed in an unreasonable or uncomfortable situation. The place for the deposition is also important and it should be remembered that the deposer has to be comfortable. In giving a deposition, or even on

trial, the answer “ I don’t know” is legitimate and the witness should not be afraid of such an answer.

Proving that an accident did not happen in a certain way is not a defense, but proving how it did happen is. Judges are human also and should be treated that way at all times. Attorneys are not above the law and should not hassle a witness to give testimony that is misleading or incorrect. A jury can never be understood by looking at them, so do not ever assume that a jury is going to rule in a certain way. Surprises in the courtroom are just as normal as they are in other aspects of life. This means that a surprise response is often effective in such situations.

A witness may be on the stand for thirty minutes or for multiple days. There is no way of knowing this, so prepare accordingly. Your attorney has a pre-established method for presenting the case, so do not go against the him. Be careful what information your witnesses bring to the case, because sometimes they have loaded briefcases. A cross-examination can get very personal, so be prepared to answer personal questions, but always keep the dialogue pertinent to the case at hand. If by chance your lawyer is against you, in a future case use extreme caution because it can be dangerous. Finally, be prepared for anything and everything when it comes to litigation.

1.15 Tips for the Engineer Involved in the Litigation

An engineer should not try to run the show since there are plenty of other people involved in the case that should take front stage. An engineer should, like all other witnesses, always be truthful and never be uncomfortable or frightened. Be prepared to listen to questions and others, and follow instructions precisely. And finally a restatement: an engineer should always be truthful.

CHAPTER 2

Products Liability in a Nutshell

2.1 Definition and Scope

I. What is a product?

A product is a tangible personal object, more commonly known as a good. Product is not limited by this and can include intangible items, such as electricity. There are several rules that can be applied in order to determine if an accident falls into product liability. The first rule being that product liability is not restricted just to the effects of a product. The situations that are handled by product liability, revolve around the defendant being in the best position to spread the loss and prevent the injury. The scope also expands to areas where it is very difficult to determine justice, such as freedom of speech and burdens of proof.

II What is a defect?

In general, a defect is a reason for imposing liability against a product supplier for injuries resulting from a product. Proving defectiveness is one of the most difficult parts of product liability. Such an issue implicates the scope of strict liability and also calls into question the differing definitions of defectiveness.

III. Types of Defect and Their Interrelation

The three main forms of defect are manufacturing and production flaws, design defects, and defective warnings or instructions. Another category that could fit as an additional form of defect would be misrepresentation. All of these types of product

defect are considered actionable wrongs. A manufacturing or production flaw is a random flaw, which almost cannot be accounted for and is not typical of the product. A design defect is a flaw in the design of a product. It can affect the whole production process if not detected in time. The defects of inadequate warning and misrepresentation are often used in product liability cases. Proper warning signs and labels must always be posted around the danger areas.

IV. Conceptual Standards for Determining Defectiveness

In any product liability case the court has to make a decision on what type of defect was involved in an accident. When a product is purchased, the consumer has certain expectations towards it. The product has to fit the purposes for which it is intended. Consumer expectation tests are performed on a product in order to detect all possible flaws. Presumed seller knowledge is another test that's used to determine if the product is unsafe. If a seller accepts the responsibility of selling a certain product it can be viewed as an indication that that product is safe. Another way to determine defectiveness is risk-benefit balancing. The issue of whether the cost of making a safer product is greater or less than the risk from the product in its present condition is analyzed. Sometimes a product is unavoidably unsafe. This is usually the case with drugs. The dangerous side effects are often justified by the consequences of disease, such as death.

Similar to unsafe defense is state of the art defectiveness defense, in which a product is deemed a necessary safety hazard. However, if the item should have never been marketed, this defense is useless. State of the art has a basis in the time period in

which the product is developed. An unavoidably unsafe product example would be a lawnmower, whereby the blade is necessary, but is also dangerous.

2.2 The Causes of Action and Damages

I. Historical Evolution – the Breakdown of Privity

Historically the law protected the manufacturer and penalized the distributor in product liability. More recently in 1932 it became obvious that the manufacturer should be held accountable for any harm caused by its product.

II. Negligence

Negligence can arise in numerous ways – through inadequate inspection, processing, packaging, warning, design, marketing, or any way in which the defendant fails to meet the standard of care of a reasonable person in dealing with a product, thereby proximately causing injury to the plaintiff.

III. Statutory Violations

Statutory violations occur when the plaintiff is within the class of persons protected by the statute and the risk is also within the statute. Such violations can include sexual and alcohol-related incidents.

2.3 Reckless Misconduct, Concealment and Deceit

Knowingly withholding information from the public, which causes harm, is illegal and the public is protected by the law. However, the mere fact that defendant has been sued numerous times, regarding an alleged defective product, does not prove willful or wanton misconduct.

2.4 Strict Liability

Strict liability in tort had its modern origins in warranty and in the tort doctrine of *res ipsa loquitur*. Courts are ambivalent about applying strict liability to warning and design cases, and to cases involving unavoidably unsafe products. The sales article has been adopted in all states except Louisiana, and by the District of Columbia, and the Virgin Islands. The implied warranty of merchant's ability arises only when the seller is a merchant. The fitness warranty is one of strict liability, since it is the seller's selection or furnishing of the goods.

2.5 Overlapping Basis of Liability

In general it is allowed for the plaintiff to plead and prove as many counts or causes of actions as he wishes. Plaintiff is entitled to recover all foreseeable damages in a product liability suit based on tort. In some cases emotional distress also serves as part of the damages.

2.6 The Parties

I. Plaintiffs.

Except for few jurisdictions that still require privity of contract for an action in warranty, a plaintiff may sue any products defendant on any available theory to recover for personal injuries. In the 1990s a large number of suits has been filed by individual states against tobacco companies to recoup medical expenses paid by the states in treating smoking-related illnesses.

II. Defendant Sellers of New Products.

◆ Manufacturers

Manufacturers have been sued on any of the theories discussed in the previous chapter. Manufacturer can also be liable for misassembly of a

product by a dealer. This can be seen in such cases as Sabloff vs. Yamaha Motor Company.

- ◆ Middle Men and Retailers.

The various theories discussed in previous chapters, including strict liability, apply to all sellers in the chain of distribution. There are some cases holding that a retailer and any middleman cannot be liable in implied strict liability for selling a defective product in a sealed container.

III. Defendant Used-Product Sellers.

The jurisdictions are divided on whether strict liability can be applied to a used product.

IV. Defendant Successor Corporation of Product Sellers.

There are many cases that are brought to a forefront where a product being sold was designed and manufactured before the company was bought out. This rises the question of who is responsible for the losses imposed by the defective product. Large area of concern is whether the successor's liability should be imposed even though a predecessor still exists.

V. Defendant Providers of Services.

- ◆ The service aspects of product transactions in reaching the conclusion that principles of strict liability should not be applied. A number of cases have been established to refuse to impose strict liability for the rendition of professional services.
- ◆ Representational conduct.

Advertisers can be held liable in negligence or strict liability for misrepresentations made by them, concerning the products of another.

VI. Contribution and Indemnity.

◆ In General.

At the common law, contribution was not allowed between joint tortfeasors, probably on much the same rationale that denied recovery to a plaintiff who was contributorily negligent.

◆ Where Grounds of Liability Differ.

There is a differing opinion among the courts as to whether contribution between the tortfeasor and another is available in areas of negligence.

Three basic positions taken by this book are: 1) allow no contribution by the machine manufacturer against the employer and in addition to allow the employer subrogation claim provided by statute. 2) to eliminate the employer's right of subrogation to the extent of employer's fault. 3) allow the manufacturer to seek contribution based on relative degrees of fault.

◆ Effect of Settlements.

Common rule is that the settlement does not release a co-tortfeasor unless the settlement agreement expressly so provides.

2.7 Factors Affecting Choice of Remedies, Jurisdiction, and Procedure

II. In General.

The applicability of other limiting factors tends to vary depending on the remedy asserted.

II. Recovery of Solely Economic Loss.

- ◆ Rule and its Rationale.

Many courts hold that a plaintiff cannot recover in court when suffered a solely economic loss from a defective product.

- ◆ Definitions of Solely Economic Loss.

Defined as loss in value, loss of use, cost of replacement, loss of profits, and damage to the business reputation, where no sudden physical accident is involved.

- ◆ Procedural Considerations.

A statute may provide the basis for a cause of action, either expressly or by implication. Due process requires that a defendant must have minimum contacts with a forum before it can be subject to the personal jurisdiction of that forum.

IV. Class of Action

Considerable interest has been developed regarding the use of class actions as a means of handling mass tort litigation.

V. Statutory Compliance

The general rule is that compliance with applicable state or federal statutes or regulations is some evidence that the defendant exercised due care.

VI. Statutes of Limitations

- ◆ The Applicable Statute

In a products case there may be two or more statutes of limitation that may be applicable to a suit. In such cases the most applicable statute has to be chosen for certain parts.

- ◆ Date of Accrual

The accrual date may vary depending on the statutory language or the applicable rule adopted by the court. The warranty statute of limitations provides that when a warranty explicitly extends to future performance of the goods, the discovery of the breach must await the time of such performance. The cause of action accrues when the breach is or should have been discovered.

2.8 Production and Design Defects

I. Production Defects

Courts often refer to a manufacturing or production flaw as distinct from a design defect. Production defect is commonly known as a random defectiveness.

II. Design Defects

- ◆ The Theory of Liability

The manufacturer incurs liability from a departure from proper standards of care, so that the tort is essentially a matter of negligence. In a negligence case the inquiry focuses on the reasonableness of the manufacturer's choice of design in light of the knowledge available at the time.

- ◆ Polycentricity

There is a big problem in the court system about the propriety of submitting complex design issues to a jury that lacks the kind of expert knowledge thought necessary to judge such issues.

- ◆ The Relation of Design and Warning Defects

A bright line is not always drawn between design and warning defects.

The placement and writing of warning labels and notices, and their content and form, may involve engineering design decisions or close collaboration with engineers. Warning and design decisions also share the feature of being generic to a whole line of products.

- ◆ Obviousness of Danger

The rule that an obviously dangerous product is, as a matter of law, not unreasonably dangerous, was once widely followed.

2.9 Inadequate Warnings and Instructions, and Misrepresentations

I. Warnings and Instructions

- ◆ In General

The plaintiff will typically allege a failure to warn, along with a design defect count, in product liability suits. The warnings must be adequate and useful, providing the user with knowledge of the level of danger, how to avoid it and how the danger occurs.

- ◆ The Standard of Liability

There is not a definitive answer as to whether strict liability should be standard in cases of failure to warn.

- ◆ Persons to be Reached

An expert does not, in general, need to be notified about warnings.

However, there may be some cases where the expert needs to be notified.

The cases differ as to whether an employer's knowledge of the danger will relieve the manufacturer of the duty to warn the employer's employees.

- ◆ Countervailing Representations

Any warning can be made inadequate by countervailing representations that downplay the danger or mislead the user regarding the nature or extent of the danger.

- ◆ Post-Sale Duties to Warn

A defendant who markets a defective and unreasonably dangerous product may have a post-sale duty to warn of dangers associated with the product.

II. Misrepresentations

An action for misrepresentation can arise in a variety of contexts. Any form of deceit, negligence, strict tort, or strict warranty can be a misrepresentation. In such cases strict liability for misrepresentation is imposed. Based either on warranty or tort, a number of product defenses and liability limitations can be avoided.

2.10 Problems of Proof

I. Cause-in-Fact

- ◆ In General

The plaintiff must prove not only defect and that the defect caused injuries, but also that the defect existed when the product left the defendant's hand.

- ◆ Several Possible Causes

One is that one of the actors actually caused the injury. Another is that a conduct of two or more actors actually contributed to the injury, but the extent of their contribution is unclear. One approach is to allow the

plaintiff to recover in full if he can show that the defendant's conduct was likely a significant part.

II. Proximate Cause and Foreseeability

◆ In General

The terms “absence of duty”, “lack of proximate cause”, and “unforeseeability”, are often considered interchangeable.

◆ Alteration

Any substantial alteration to the product that causes the accident may bar recovery.

III. Plaintiff Misconduct, and Comparative Fault

◆ Types of Misconduct

There are three types of plaintiff misconduct. Mainly they include contributory negligence, assumption of the risk, and misuse, including alteration of the product.

◆ The Effect of Plaintiff Misconduct and Strict Liability

Unforeseeable misuse of the product, whether by the plaintiff or another, eliminates the party's ability to recover in strict liability for injuries proximately caused by such use.

IV. Miscellaneous Problems of Proof

◆ History of Unsafe and Safe Use

Evidence of unsafe use and of prior accidents with similar products is admissible for a variety of purposes.

◆ Spoliation

The person willfully or negligently disposes of product evidence vital to a litigation case.

- ◆ Expert Testimony

Expert testimony is generally admissible if it will aid the fact finder and its determination of an issue in the suit. Expert testimony will frequently be essential to establish a prima facie case of defectiveness, causation, damages, and other issues in the suit. The expert may not be permitted to testify if the subject matter of the testimony concerns the matter of common knowledge or if he lacks requisite qualifications as an expert in the field. An expert need not be familiar with all the aspects of the subject matter of his testimony.

- ◆ State of the Art and Industry Custom

Industry custom can be admissible as evidence if its purpose is to establish a standard of care. State of the art is usually defined as the scientific or technical knowledge, available or existing when the product is marketed. Such knowledge need not be the same as, or even reflect what people actually know or actually are doing, or even what they know or should be doing at the particular time or place.

2.11 Epilogue

Product liability implicates many basic values in our society. It will undoubtedly continue to be a controversial field of law, because it cuts across so many fundamental issues.

Chapter 3

Case One

3.1 Introduction

Our first case deals with Automar New England, Inc. and Stockbridge Motors, Inc., involving an incident that occurred on September 22, 1992 with a car lift. A car, while being lifted, slid off of the front of a two-post TP9 lift and one of the lift arms hit Santino Dellea (plaintiff). The car was on its way up and had only achieved about half of its height before the accident occurred. As a result of the accident, according to doctors John Bouillon and Lawrence Cohen M.D.'s, Mr. Dellea permanently suffers from reflex sympathetic dystrophy and has a forty percent disability in his left arm. A significant damage to the car was also done.

The plaintiff ordered two lifts from Automar New England, one a big ramp Arcanous and the second a 9,000-pound Mohawk lift. A company specializing in lift installations, Northeast Lift Installers, was hired by Automar to perform the installation. The order placed by Dellea had been for two brand new lifts with safety features and a set of overhead doors to be purchased and installed. The Mohawk lift, model number LMF12 and an Arcanous four post lift, were the lifts specified in the contract. Instead of delivering the Mohawk, a used, less expensive two-post TP9 was installed with no safety arms. The safety devices provide a back up system that functions to prevent a vehicle from falling off in the event of the lift's malfunction. The overhead doors were omitted completely.

The installation took two days, including instructions on how to operate the lift. The installer was questioned as to where the safety features that were supposed to be on the lift were and why they were not visible. Mr. Dellea was told by Dennis Roberts that most people do not like the safety restraints and end up taking them off anyway. Thus the safety restraints were not provided.

The fact that the lift did not have the safety arms went against Dellea's order, which specifically asked for them. According to an engineer Lawrence Voelker who testified on the plaintiff's behalf, the automobile lift system in the garage was unsafe because it did not have arm restraint devices. The restraints would have prevented Dellea's injury because they would have stopped the arms from swinging so far. Voelker also says that according to three different safety standards, by the year 1992 the lift should have had the arm restraining feature-installed standard, not as an option.

3.2 The Standards

The standards pertaining to car lifts are as follows: 1. American Standards Institute safety standard article ALI B153.1 1990, 2. Automobile Lift Institute Standard "Safety Requirements for Operation Inspection and Maintenance", 3. Safety Manual "Lifting Right". These standards guide the design and manufacturing of car lifts.

3.3 Complaint

After installation Mr. Dellea contacted Automar and made a complaint that Automar did not follow the specifications in the contract. In response Automar informed Dellea that they would order arms and install them. Although Dellea knew that the lift was unsafe he proceeded to use it anyway. An accident happened that same day after lifting only 8 to 10 cars. Following the accident the plaintiff served a 93A Demand letter

to Automar who failed to respond and make a reasonable offer of settlement. After that Mr. Dellea sued Automar and Northeast Lift Installers on six counts.

The six legal counts brought against Automar New England Inc. are as follows:

- I. By failing to provide the Plaintiff corporation with the lifts originally agreed to be contracted for, Automar has breached the contract, there by causing Plaintiff harm.
- II. By failing to provide the overhead doors and their installation, Automar breached the agreement with the Plaintiff thereby causing Plaintiff's harm.
- III. Automar provided a defective lift, as it was installed without the requisite safety features. Automar's negligence caused Plaintiff permanent disability, pain, and suffering.
- IV. Automar's actions herein constitute a violation of Massachusetts consumer protection law.
- V. Automar's acts constitute breach of implied warranty pursuant to Massachusetts General Law.
- VI. Installer negligently and carelessly installed the lift in a dangerous and defective condition.

The accident occurred when Mr. Dellea was hoisting a car on the two-post TP9. The lift achieved half of the desired height when the car slid off the front of the lift. There is one post on each side of the car as one drives over the lift and each post has two swing arms. Santino Dellea was the injured party and as a result suffered from a swollen

hand, arm and forearm. He cannot perform the same actions as before and relies on others to do the work he cannot do.

3.4 Conclusion

After reviewing all the evidence we came to the decision that Automar is mostly responsible for the accident. This case is a strict tort product liability, falling under section 402A of the Rest. 2d of Torts which states "One who sells any product in defective condition, unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user". Automar clearly sold and had installed a lift that did not have safety features contracted to by Dellea.

Not only did Automar not deliver the correct lift; instead they had installed a lift that was dangerous to operate, since it did not have safety arms. Northeast Lift installers was also partially responsible for installing an unsafe lift, but they were only doing as they were told by Automar. Even though Dellea was injured, he should take some responsibility as well. He was aware that the lift was unsafe, yet he proceeded to operate it. We feel that the per cent breakdown should be as follows:

Automar 80%

Northeast Lift Installers 10%

Santino Dellea 10%

Dellea's award should consist of money spent on medical bills, lost wages due to downtime of the lift and inability to work, the cost of hiring an employee, as well as pain and suffering.

Chapter 4

Case Two

4.1 Introduction

The second case involves NAPCO, Inc. (plaintiff), a company that produces plating machines, and Brunswick Corporation (defendant), which manufactures golf clubs.

4.2 Complaint

On March 23, 1992 the plaintiff and the defendant entered into a contract where the plaintiff agreed to furnish an automatic return type plating system (Figure 3) and related equipment to the defendant.

The total amount to be paid to the plaintiff for equipment and installation was agreed upon in the contract to be \$1,561,605.00. The plater and the equipment were installed in 1993 and were successfully inspected and accepted by the defendant. The plaintiff claims that it has performed all of its contract obligations and expects a full payment. The defendant, however stopped payments with \$162,385.00 balance remaining, plus accumulated interest.

4.3 Defendant's Response

The defendant admits that on March 23, 1992 the contract was signed, which acknowledged defendant's purchase order, thereby accepting its terms and creating a valid contract. The defendant also admits installation of golf club plater that was inspected for defects. The plater was only accepted, however, after the plaintiff's assurances that any nonconformity will be seasonably cured. Though the defendant

accepted the plater and related equipment, they deny accepting them as conforming goods. The defendant agrees on the set price, but the payment was going to be made only when plaintiff fulfilled all of its obligations. Since, according to the defendant, plaintiff did not fulfill its obligations, the remaining balance of \$162,385.00 is denied.

4.4 Defendant's Special Defenses

This section includes Breach of Contract, Breach of Express Warranties, and Breach of Implied Warranty of Fitness for a Particular Purpose.

The agreement was that the plater was to be capable of plating nickel/chrome on steel golf club shafts at a rate of at least 2880 shafts per hour, according to the following five specifications:

- I. Plater would fully plate shafts with minimum thickness of 0.0005 inches of duplex nickel plate, distributed uniformly over the entire shaft surface.
- II. Plater would fully chrome plate shafts with minimum thickness of 0.00001 inches.
- III. Plater would fully plate shafts to look like 6 sample shafts given to the plaintiff by the defendant on 3/18/92.
- IV. The shafts will have no more than 15 spots over the entire shaft after 48 hours of salt spray testing as called for by ASTM#B117-73 standard.

Pursuant to the contract, the plaintiff's obligations include repairing or replacing of the plater or any equipment material that does not perform as specified in the contract.

In order for the defendant to sign the contract plaintiff has promised certain express warranties including the following:

- I. Particular plater is superior in durability and low maintenance and operating up-time.

II. Plater is free from defects.

III. Plater can produce 2880 shafts per hour.

These express warranties became the basis of the bargaining towards the final contract. Following numerous failures of the plater, the defendant attempted repeatedly to get the plaintiff to repair the defects. When the plaintiff refused, disregarding the warranties and thereby breaking the contract, the plater was repaired by the defendant and the cost of repairs was deducted from the total price in accordance with 42a-2-717 Connecticut General Statutes and the letter dated 1/17/94.

The defendant was relying on the plaintiff's skill or judgement in selecting an automated RT machine. The system was unsuitable for the particular purpose intended by the defendant.

4.5 Max Caldwell's Deposition

Max Caldwell, the president of NAPCO, discussed the following things during his deposition. There was an elevator tilt problem that was occurring multiple times prior to chain failure (Figure 1). Elevator problems left the clubs submerged in the solution, creating a lot of scrap. The elevator problems have never been repaired. Caldwell answered: "Yes" to questions on whether the elevator and the racks were properly designed. When asked about the fluctuations in the solution level of the tanks, Caldwell answered: "I don't know". The tanks, for both nickel and chrome plating, have automatic level controls that can be adjusted by the operator. There should be open knowledge on the fluctuation of tank levels.

Michael Laplante was in charge of tank design. He was not responsible for checking the automatic level controls. The sensors and other such devices for the

solution level were purchased and not in-house designed. The manufacturer's literature for adjusting the sensors is in the manual. The NAPCO platter has an automatic lubrication system. When the wider chain was installed, a larger brush was installed as well.

Electrical fluctuations in the platter machine were occurring due to chemical reactions in the tank. Max Caldwell feels that the Brunswick Company had difficulty maintaining the solution level due to the chemical changing conductants, rather than mechanical troubles. Caldwell was asked how NAPCO eliminated possible mechanical causes of the electrical fluctuation problem experienced by Brunswick in the fall of 1993. Many parties checked the system and nothing was found. The system had every nut and bolt tightened. Tightening of the system had no effect.

It is the testimony of Mr. Caldwell that the fluctuations were mainly due to the fact that the system runs on such low voltages. Thus it was very sensitive to voltage drops. Also some indications exist that there were loose electrical connections, which could have also contributed to the fluctuation problems. The system was ran backwards within six months of installment, which also could have had adverse consequences. The carousels ran one station at a time, possibly not allowing the switches to work correctly.

Brunswick adjusted the lifting chains, but only two or three of the eleven lifting chains were of the incorrect length. These did not affect the sheave (Figure 2) that broke however. Other modifications were made to the system, including one of the two evaporator shells being replaced. Brunswick also modified the ventilation system by removing tank cover and baffles, which seriously affected the ventilation ability.

Max Caldwell concludes, after considering all the facts of this case, that the automated return type system has performed to NAPCO's expectations except for the sheave. He also concludes that "dummying" the solution could have cured the fluctuations in voltage. Dummying is a practice of lowering the solution's metallic properties by adding other substances, that are impure.

4.6 Design and Installation Problems

In a letter from Vin Gianetto to Mr. R. Johnson on October 13, 1993 the claim was made by Mr. Gianetto that the support bearing system was misaligned. The system works by having a hydraulic cylinder, which pulls three chains, raising an elevator beam that controls golf shafts by raising and lowering them into plating solutions. Two of the three chains lift 10/11th of the weight and rest on a triple sheave. They bend 90 degrees and pull a draw bar. The third chain, located between the other two, supports 1/11th of the weight and bends 180 degrees.

4.7 History of Problems with the Golf Plating System

The following list summarizes the problems associated with NAPCO's golf plating automated return system:

- 1) 5/01/94 The system visually appears to have a sheave that takes the pivot load, that have been replaced 5 times. The twin lift chains have been replaced twice. The current lubricating system does not adequately lubricate the chains.
- 2) 11/24/93 Two load-bearing chains failed and were replaced with chains that are 1 7/8" times the size. The manufacturer said that the load-bearing chains failed because of poor alignment, lubrication, and

overloading. The lubrication and alignment problems have not been corrected. Brunswick suspects that the lifting load is too big.

- 3) 5/16/95 The 1 7/8" diameter sheave axle snapped in half.
- 4) 7/12/95 Draw bar, being pulled by lifting chains broke.
- 5) 2/7/94 Single sheave (no fins) was replaced by triple sheave to prevent walking.
- 6) 8/4/94 Triple sheave was replaced with a new triple sheave because the fins on the old one were getting cut down to a knife's edge.
- 7) 5/16/95 Axle on triple sheave snapped.
- 8) 10/11/93 Two setscrews on left side of left side sheave assembly come loose, allowing sheave to drift to right pillow block. Machine shut down and repaired by NAPCO, costing 5 production hours.
- 9) 10/26/93 Limit switch failed, causing waste of oil. The switch was replaced and the oil filled.
- 10) 10/27/93 The elevator is not making contact with the upper limit switch due to chain stretch. Two hours of production time lost and 2640 shafts were scrapped.
- 11) 11/3/93 Elevator stuck down for 10 minutes. As a result 900 shafts were lost.
- 12) 11/11/93 Elevator won't go all the way up due to chain stretch. Upper limit switch was not activated.
- 13) 11/18/93 Cardboard shim used.
- 14) 11/24/93 On an incident, previously noted the chains were severely worn on

the top and bottom, indicating a possible turnover.

- 15) 11/29/93 The right chain was drifting right, towards the edge of sheave.
- 16) 11/30/93 NAPCO installed a plate on the right side of the sheave to prevent chain from drifting off edge.
- 17) 12/13/93 Left chain drifting off the sheave.
- 18) 2/7/94 Sheave number 4 installed with four chain separation fins.
- 19) 2/8-28/94 Two over traveled system faults. Elevator tilt faults.
- 20) 3/22/94 A new lube brush was installed because the old one could not cover the chain width of the new chains installed 12/27/93. Brush still does not lubricate critical part.
- 21) 7/12/95 Draw bar, pulled by the two lift chains snaps.

The elevator system is unstable, causing automatic safety shutdowns more than 40 times since the beginning of June 1993. These shutdowns resulted in a loss of 17,000 products. The instability of the elevator system prevents NAPCO from satisfying production requirements. Brunswick Corporation has three design alternatives to improve the system, but in meetings NAPCO denied the existence of any problems.

4.8 Case Analysis

After reviewing the evidence of this case we decided that the important aspects are the broken shaft, chains, and the contract entered into by both parties. Figure 4 depicts the broken shaft. The set screws, 90 degrees apart, severely limited the strength of the shaft by creating a crack that with use slowly crept towards the center of the shaft, eventually aiding to its failure.

As the system turned, the ultimate strength was lower than the endurance strength, which caused the shaft to shear and break. In designing such a system the bending stress needs to be lower than the ultimate stress so the system can last forever. In this case the bending stress was greater than the endurance stress, causing the failure of the shaft. This might not have happened if the shaft was designed to be thicker.

The multiple chain failures were partially caused by the inadequately designed shaft that bent, causing them to slide, twist, and eventually fail. The primary mode of chain failure was high load/low cycle fatigue failure, due to chain overloading. When the original chains were replaced with thicker ones it caused the whole system to rely upon the strength of the shaft. The shaft could not withstand such abuse and snapped. The entire system was doomed to fail from the beginning because every repair caused a weak point to be strengthened and a different weak point to be created.

These design failures make NAPCO fully liable for any financial losses due to downtime that Brunswick has incurred. On that basis the plaintiff, NAPCO, should not be awarded any money at all and, in turn, should pay Brunswick. The money that Brunswick should be paid will include economic loss due to downtime and repayment of all repair expenses. In addition the following options exist:

- 1) System should be fixed once and for all
- 2) System should be replaced with a similar-functioning golf plater
- 3) The cost of the machine should be refunded at a going interest rate

4.9 Illustrations

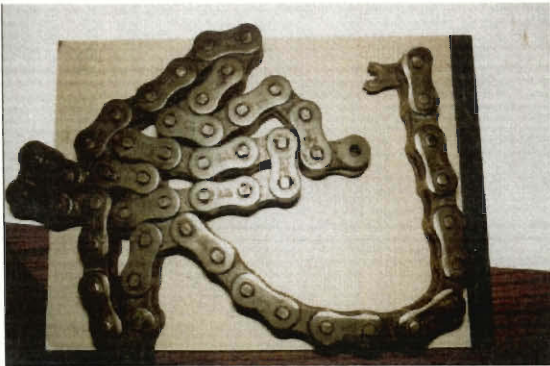


Figure 1 Broken Chain

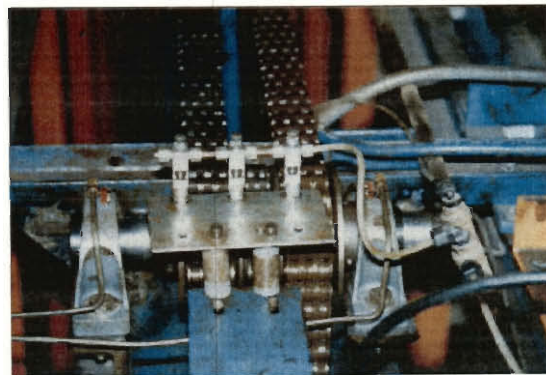


Figure 2 Triple Sheave System



Figure 3 Golf Plater



Figure 4 Snapped Shaft

Chapter 5

Case Three

5.1 Introduction

Our third case involves a printing press operator Barton Ankenman, a printing press manufacturer Web Press, and printing company World Printing. The actual accident occurred when Barton Ankenman was injured, while employed at World Printing and operating an Atlas press, manufactured by Web Press. He sued Web Press, who in turn sued World Printing.

5.2 Ankenman's Deposition

Barton Drew Ankenman started printing in 1981 in Treasure Chest Advertising. He first started as a jogger, a person who stacks product on a skid, and eventually worked his way up to second pressman. In 1985 Ankenman left Treasure Chest to work for his old boss Mr. Smith at another printing company, Hoffine, as a head pressman. He was fired after two years. After that he moved to Nevada to work at Winn Press as a second pressman, where he received on-the-job training. The company closed several months after Ankenman was hired, so he went to work at a different Treasure Chest plant in Reno, Nevada, from where he was shortly laid off. In 1990 he found a printing job at KTB, where he worked for 2 years as a second pressman on a cold press. In 1992, Ankenman was hired at World Printing by production manager Mike Adesso as a second pressman. In February 1993 he was promoted to a head pressman.

On March 24, 1993 Ankenman was scraping a hickey off the plate cylinder on a running press when his hand got sucked in between the cylinders. A hickey is a spot on the printing made by a collection of lint and ink and has to be removed by scraping the

plate cylinder. A plate cylinder produces an image on the blanket cylinder which, in turn, makes an image on paper. Ankenman used 10/1000 mylar to scrape the cylinder because it is safe on plastic. Mylar is not a specific tool to clean hickeys, but it was used at World Printing for that purpose. The top speed at which the press can run is 22,000 impressions per hour. At the time of the accident the cylinder was moving quickly, but wasn't up to full speed yet. The method for scraping hickeys, taught to Ankenman at Treasure Chest by Denny, several previous supervisors, and operating manuals, required the press to be running. Ankenman did not receive any safety instructions on the scraping process at World Printing. He also could not remember if his press had a safety instruction plate or what the plate said. (Figure 1)



Figure 1 Safety Instructions

The press in this case has two main control units and six ink printing stations. The main units have four controls a “stop” button, a “run” button, an “inch” button, and a “speed adjust” knob (Figure 2). In order to run the machine in printing mode the system has to be in run mode with the stop button out and then the speed can be adjusted. The

inching feature can be used only when the stop button is depressed and then the operator can either hold the inch button or tap it for even slower speed. On the day of the accident the panic stop button was operable. Each operating unit can be operated individually, except for the inch operation.



Figure 2 Operating Controls

Mr. Ankenman does not know the purpose of the metal guards around the plate cylinder. He recalls seeing guards on units but says it's impossible to scrape a hickey with a guard on because it won't be visible. When asked about the "inch" button, Ankenman said that it cannot be used while scraping hickeys and that the press has to be in "run" mode. He recalls signing off for the reading of the press room safety rules that require all guards on rollers to be on, but cannot remember if he had his on. Ankenman's opinion on safety guards is that they are hard to put on and that the procedure is more

dangerous than scraping hickeys. During his time at World Printing no one has ever told him that he wasn't removing hickeys properly.

At the time of the accident Ankenman and second pressman Willy Mitchell were setting up a job on the press. The set-up process includes putting on of the plates and threading the web. Ankenman was scraping a hickey, while Mitchell was operating the other three units of the press. Ankenman got momentarily distracted by a loud bang created by a dropped skid, at which point his hand got caught between the plate and the blanket cylinders and was sucked in. The bottom cylinder was moving towards him and the top one away from him. When he felt his hand go in the roller he reached around and pressed the "stop" button. After stopping the press, shift supervisor Steven Gomez and Mitchell tried to manually reverse the unit with a crank. When that did not work the top roller had to be unbolted in order to free Ankenman's hand.

Ankenman put the injured hand into a bucket of snow and waited for the paramedics. He recalls not feeling any pain at that time due to shock. He was taken to Albany Medical Hospital, where he stayed for five days. On the day of his arrival to the hospital missionaries from his church came by and gave him a blessing. He does not remember much more about his stay there because of the effects of medication. One of the doctors who treated him was Doctor Khuri. The doctors managed to save his hand, but had to amputate the middle finger. He was also prescribed physical therapy sessions for the next 4 years. When Ankenman was finally discharged from the hospital, he filed for workman's compensation.

5.3 Testimony of Sam S. Clevenson

Mr. Clevenson's business is the Jewish World Inc. located at 1104 Central Avenue Albany, NY 12205. There he did business with World Printing, selling the service of web newspapers. The company stopped activity in June of 1994. The press in question was purchased from Web Press Corp. to take the place of a Goss press previously owned.

The contract says that they bought one Seven Unit Web Leader Press with six perfecting printing units and one quadra-color unit. Mr. Ankenman's hand got caught in one of the six perfecting printing units. The final stage is a folder unit that puts the pages together to look like a newspaper. The total cost of the new unit and installation by Web Press Corp was \$689,500.

Mr. Clevenson was unclear as to the qualifications of the person who installed the lift. William Hinkens installed the lift, and was either a professional installer or a mechanic. Chuck Gath was the sales manager for Web Corp that helped in the sale of the web press, along with William Aldrich. Mr. Clevenson was questioned if he was ever asked for aisle guards and he said there was no discussion. The entire system was installed during April and May of 1990, taking five to six weeks.

Mr. Hinkens did the training during the last week of installation and trained all personnel in the press department. Five or six people were trained but Mr. Clevenson does not feel that any of those people were around when the accident occurred. Mr. Adesso was the supervisor of Mr. Ankenman.

The prior Goss press had guards on it provided by the manufacturer, so it was felt that the new press needed guards also. As a result, twenty red guards were purchased,

but not from Web Press Corp, to provide added safety for inadvertent contact. The guards were ordered from Rand Manufacturing because they were cheaper and the measurements were made by “Mr. Mongin or someone”. There were twelve guards purchased on 1/6/92 and four more on 2/26/92 and they were installed sometime in 1992.

Mr. Clevenson was questioned as to what a hickey was and the procedure for removing a hickey. He responded that a hickey is a spot of lint or ink that gets onto roller. The procedure to remove it by utilizing the 2-3 inch/touch button. There are dangerous nip points on the folder where the paper comes down and registers through the folder. The nip points are necessary to make the paper fold correctly. The printing cylinder is hidden by the guards and the procedure to remove a hickey is to stop the system and inch to clean. Mr. Adesso was in charge of enforcing that procedure.

The guards were in place before Ankenman’s accident. Bart Ankenman tried to remove a hickey, while the press was operating and got his hand caught. The press was sold after this to a place in Maine; namely Cameron Publishing in Biddeford, after Web Press bought it back. The press was operated for another year after the accident and the red guards left with it. There was a previous accident involving Richard Jones, who was injured on July 23, 1990 by the quad-color machine.

5.4 Plaintiff’s Answers to Defendant’s First Set of Interrogatories

The plaintiff was attempting to scrape a hickey off the plate cylinder with a piece of film, when a portion of his left hand went between the ink roll and plate cylinder. The guards on the system were inadequate and provided little or no safety. Product was improperly designed and there was no way to keep the plaintiff from being

injured. New York laws hold that the seller of a defective product is liable for injuries proximately caused by negligence and in strict tort liability for defective design.

The nip points should have been noted and properly guarded using “interlocking gate guards” to prevent access of the users hands/fingers or clothing to the nip-point hazard. Through proper interlocking the machine could have been prevented from running during an operation, requiring greater access to the area around the ink roll and plate cylinder. The defendant failed to properly inspect the subject product before putting it on the market for sale.

The plaintiff Bart Ankenman suffered the following injuries as a result of the accident.

- A. Crush/degloving of left hand
- B. Significant tissue loss of skin on pulmar aspect of left extending to the proximal volar wrist crease
- C. Exposure of flexor tendons in the wound
- D. No flexion or extension of left fingers or wrist.
- E. No sensation in 3rd, 4th, or 5th digit
- F. X-rays revealed radial styloid fracture, 4th metacarpal base fracture and displaced fractures of the 2nd to 5th proximal phalanges
- G. Significant skin avulsion over left palm and bases of digits extending to distal wrist crease with flaps distally based; significant deformity of all digits
- H. Fractures of all phalanges, multiple displaced and angulated; metacarpal

fourth base fracture and hamate fracture

- I. All kinds of pins were added to help hand heal including four-C wires into left pinky
- J. Bruising and contasing of nerves at MCP joint area
- K. Avulsed ulnar digital artery to middle and ring fingers
- L. Repeat irrigation and debridement
- M. Fever/nausea and vomiting
- N. Application of splint to left upper extremity
- O. Skin grafts repair of flexor sheath
- P. Small open area of index finger 6.00mm by 1.50mm
- Q. Joint stiffness
- R. Debridement of necrotic skin
- S. Removal of all pins
- T. Bone loss, primarily in the little finger, proximal phalanx, bone deficiency
- U. Nonunion of proximal phalanx of little finger
- V. Occupational therapy

Ankenman went to the Albany Medical Center the day of the accident. He was in and out of the hospital for different reasons for years after that. Ankenman was 37 years old at the time of accident with the life expectancy of 38.3 years more according to the life tables of the United States National Center for Health Statistics. The plaintiff incurred the following expenses:

- A) \$96,033.94 in medical bills

B) \$76,657.00 in lost wages

Web Press corporation was negligible in the following six ways:

- A) Negligently designing, manufacturing, and selling an inadequate printing press with an inadequate guard system.
- B) Not providing the guarding system as standard equipment
- C) Not preventing the plaintiff's hand from entering between the ink roll and the print cylinder
- D) No hazard warnings
- E) No instructions as to use
- F) Not providing the guards on the subject press

5.5 Answers to Interrogations

Plaintiffs: Barton & Brenda Ankenman

Defendant/Third Party Plaintiff: Web Press Corporation

Third Party Defendant: Clevenson Corporation/World Printing

The third party defendant did not notice any malfunction, defect or danger in the operation or use of the subject product. The product was continuously inspected and tested by the third party defendant before occurrence. In 1991 third party defendant had guards fabricated to cover the area of cylinder rollers. Plaintiff received instructions or training with regard to use of the subject product. Usual custom and practice of third party defendant to instruct anyone using the press to clean the press cylinders by inching and to use guards at all times when the subject press was running. In 1990 Richard James was injured on a different unit of the press.

5.6 Letter from Web Press to Phelan, Burke & Scoloniero, LLP

The machine in question was developed in the early 70's before OSHA regulations. (Figure 3) There was a safety meeting at World printing, held in Albany, NY on 09/10/90. This meeting was to discuss loading rules, 1/4" nips and 1/2" nips, and keeping guards in position. In regards to the Rich Jones accident Rich was informed that guards existed for the quad-color system, but were probably not bought due to cost. Rich fell into a roll of paper which pushed him into a quad-color unit. Since the system was going slow Rocco was able to stop the machine in time to save Mr. Jones' hand. The incident went down as a fluke accident.

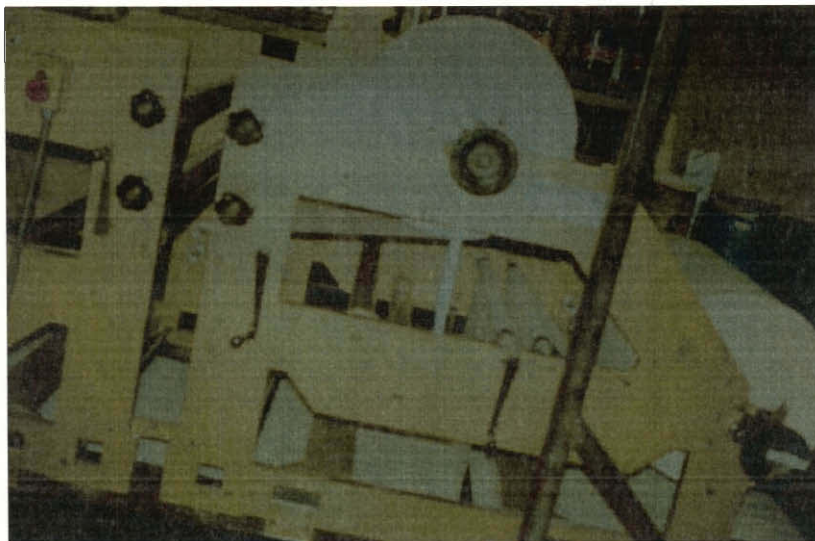


Figure 3 Printing Press

The quote dated 09/18/89 for the purchase of 6 units of size 22-3/4 by 36", 6 roll positions, stop/inch buttons, installation, start-up and instruction service would total \$496,000. Other similar units were \$401,000, the trade-in of the Goss brought \$130,000. Optional aisle guards were available at a cost of \$315.00 per perfecting unit and \$900.00 for the quad-color unit.

5.7 World Printing Safety Rules

All press operators at World Printing are required to sign off after reading the safety rules. Ankenman read and signed the rules when he was hired at World Printing as well. One of the rules was “Guards that cover press rollers must be in place before starting the press”. While reviewing Ankenman’s employee file, Sam Clevenson, the president of World Printing came across a list of some safety suggestions. A suggestion on the procedure for cleaning a cylinder was:

“If one prize were offered to a pressman who could demonstrate the safest way to clean a cylinder, all would choose a good rag, hold it neatly under his hand, and use an “inch-safe-work” method. No one would wipe the cylinder while moving”

5.8 Gerald C. Rennell’s Expert Testimony

Mr. Rennell testified regarding hazard analysis. His opinion is that the subject press was not reasonably safe and was defective in that there is no proper point of operation guarding system to protect against nip-point hazards. Nip point should have been protected with interlocking barrier guards. (Figure 4) -- Nip Point



The machine should have had a crawl/inch button, dedicated to the printing unit. This would have allowed the user to jog the press and find a hickey. If the company had done proper hazard analysis then the guarding system would have been used. Mr. Rennell has done more than 50 hazard analyses. He is qualified as an expert in a field of industrial machine guarding and safety in both federal and state courts, specifically in New York as an expert and printing press guarding. From 1977 to the present he was a safety consultant with Technical Safety Associates.

5.9 Doctor Harkness' Expert Testimony

Dr. Harkness will testify as to the design of the web press unit involved in Mr. Ankenman's accident. Safeguarding in general will be discussed and how to determine what kind of safeguard to use on this system. He will give an opinion that hickeys are foreseeable in the printing press operation. The defendant failed to provide adequate guarding systems for the point of operation of this unit. The defendant also failed to provide a local jog control at each unit. The defendant should have provided an interlocking guarding mechanism because it is technologically and economically feasible and they have been around for 50 years. He will testify that it is common practice for the hickeys to be removed without shutting down the system.

5.10 Mr. Riccardi's Testimony

Mr. Riccardi will testify as to the value of the economic loss Mr. Ankenman incurred. Mr. Ankenman worked for 10 dollars an hour for 50 hours a week, based on reviewing his tax returns. His lost wages are \$140,457.00 and lost fringe benefits total \$33,301.00. These following figures are based on the assumption that Ankenman will work until he is 61. Future lost wages total \$583,728.00 and fringe benefits of

\$176,365.00, for a total of \$933,851.00. This is based on 10 dollars per hour and an increase of 3% annually. The fringe benefits are 30% of the pay.

5.11 Other Pertinent Testimony

Dr. Khuri will testify as to orthopedic care of Mr. Ankenman and to the fact that he was injured from a previous press job, which caused severe permanent disability to his left hand. Dr. Singh will testify that his left hand is virtually without functional use. Dr. Dolph will testify with respect to the plastic surgery Mr. Ankenman received. Nancy Clement will testify as to the occupational therapy necessitated by the injury.

5.12 Case Analysis

After examining all of the evidence we conclude that Web Press Corporation should take responsibility for selling an unsafe product to World Printing. The press should have been equipped with interlocking guard system and an “inch” operation on each ink unit. The interlocking guards would electrically disable the system when tampered with in even the slightest manner. This would have prevented Ankenman from getting his hand pulled into the roller at the nip point. Compared to the total cost of the press, the cost of the decent safety system is negligible and should come standard.

Since Ankenman cannot legally press charges against his employer, World Printing Corporation, he sued Web Press directly who in turn sued World Press for not providing proper training of their employees on the operation. We feel that World Press should also be held accountable for the accident in terms of not upholding their safety regulations. In the common need to remove the hickey, a second person should inch the press from the main control. Ankenman, though injured severely, is also partially responsible for the accident. He did not follow the safety rules or the proper procedure of

scraping hickies. On the day of the accident he purposely removed the simple safety guard that was installed on the unit.

Even though there were no standards established for the mandatory guard system to be installed on a press at the time of purchase, Web Press should have anticipated this possible safety hazard and not have sold the product without the guards. World Printing should have installed the interlocking guards and not been so dangerously cheap.

The per cent break down of fault, we feel, should be:

50% World Press

25% World Printing

25% Barton Ankenman

We feel that this case is worth a total of \$1,029,884.94, which is the sum of all of Ankenman's medical bills, lost wages and fringe benefits, in addition to the future wages and fringe benefits. This means that he will receive 75% of this total, which is \$772,413.71.

Chapter 6

The Trial

The final phase of our Interactive Qualifying Project was to have a trial of the third case involving the web printing press. There were actually two trials held, the first being the case of Barton and Brenda Ankenman against Web Press Corporation, and the second case, the trial of Web Press against World Printing. We served as the lawyers and presented the case to two different juries, each consisting of four individuals.

First, we presented what product liability involves and then a basic overview of the case. Then more specifics were introduced with the aid of slides, a movie, and also drew representative drawings on a white board. One of the main parts of the trial was accident reconstruction because of the difference of opinion in the witnesses of the case. Then arguments were made as to who was at fault and on what basis under the law. The jury was then given the following questions with the corresponding unanimous decision made by all members of both juries.

Trial One

1. Did Web Press sell a defective machine to world printing? NO
2. Did Web Press sell defective guards to World Printing? NO
3. Did the printing press have a defective Stop/Start/Jog/ control system? NO
4. Did the web press have defective warnings? NO
5. Did Web Press provide adequate instructions? Yes
6. Should Web Press pay any money to Barton Ankenman for his injury? NO
7. Should Web Press pay any money to Brenda Ankenman for her loss of consortium? NO

8. Did Barton Ankenman contribute to his own accident? Yes 99%

Trial Two

1. Did Web Press sell a defective press to world printing? NO

2. Did Web Press provide adequate instructions to world printing? NO

3. Did World Printing alter or modify the web press to make the press defective?

NO

4. Did World Printing provide defective guards? NO

5. Did World Printing contribute to Mr. Ankenman's injuries? NO

6. Did World Printing provide adequate instructions to Mr. Ankenman? YES

7. What percent did Web Press contribute to Mr. Ankenman's accident? 0%

8. What percent did World Printing contribute to Mr. Ankenman's accident? 0%

9. Should Web Press be awarded any money from World Printing for this case?

NO

Our group had a completely different conclusion to the case as was seen in the previous chapter. We awarded Mr. Ankenman 75% of one million dollars. The jury was lost in a cloud of misinformation provided by other groups. They also did not have enough of the background into product liability that we obtained through our study into the subject in general, and also the other two cases.

The actual outcome of the trial held in Albany New York was that Mr. Ankenman won and was awarded some amount of money in the order of one million dollars. This means that the jury found that he was less than fifty percent responsible for the accident. When a plaintiff is found to contribute more than or equal to fifty percent then he is awarded no money.

Conclusion

Product Liability has emerged into the forefront about thirty years ago and still remains an ever expanding and developing field. It is essential to protect all individuals from the possibility of injury. The large corporations are responsible for contributing to society and utilizing their capital for making safe products. Large companies earn so much money from people and therefore, should invest some of it back into safer equipment and future products.

The study of a car lift case, a golf plating system, and a web press showed a piece of a large field and allowed greater understanding of actual examples. This proved to be a very positive learning experience that was also interesting. As soon to be engineers we learned that decisions we make in the future can affect the welfare of others and that this should always be remembered.

Bibliography

1. Lux, William J. An Engineer in the Courtroom Society of Automotive Engineers, Warrendale, PA. 1995.
2. Phillips, Jerry J. Products Liability in a Nutshell West Group., St. Paul, MN. 1998.