Open-Ended Problems: A Future Chemical Engineering Education Approach. J. Patrick Abulencia and Louis Theodore.
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Legal Considerations

This chapter is concerned with legal considerations. As with all the chapters in Part II, there are several sections: overview, several technical topics, illustrative open-ended problems, and open-ended problems. The purpose of the first section is to introduce the reader to the subject of legal considerations. As one might suppose, a comprehensive treatment is not provided although numerous references are included. The second section contains three open-ended problems; the authors' solution (there may be other solutions) is also provided. The third (and final) section contains 35 problems; *no* solutions are provided here.

21.1 Overview

This overview section is concerned with—as can be noted from the chapter title—legal considerations. As one might suppose, it was not possible to address all topics directly or indirectly related to legal considerations.

However, additional details may be obtained from either the references provided at the end of this Overview and/or at the end of the chapter.

Note: Those readers already familiar with the details associated with this subject may choose to bypass this Overview.

Technology affects almost every area of human activity in one way or another. Therefore, one can expect that legal relations between people will have to be taken into account. Even though unique developments in technology will continue to be in the realm of reality, those involved with any field of engineering and science plus those involved with law should consider how technology and law might interact.

It is incumbent upon those engaged in any area of technological development to acquire a basic understanding of patent law, and legal considerations in general, because the patent portfolio of a company, particularly one focused on research and development, may represent its most valuable asset(s). Certain activities, such as premature sale or public disclosure, can jeopardize one's right to obtain a patent; the reader should note that patents are creatures of the national law of the issuing country and are enforceable only in that country. Thus, a U.S. patent is enforceable only in the U.S. To protect one's invention in foreign countries, one must apply in the countries in which protection is sought. In addition, one can obtain a general idea of the development/progress of a new technological field by monitoring the number of patents issued in that field.

As with any invention, the qualities that make technology-related inventions patentable are *novelty*, *non-obvious*, and *utility*. While many unique aspects of technology are already known, more are being discovered as are new ways of exploiting known properties, all of which can lead to patentable inventions. The growth of patents in the chemical engineering industry is a clear indication of the recognition of its importance in this field.

Another area of concern is government regulations. Environmental regulations, in particular, have become a concern for new technological development. In fact, for many technologies it is the increasingly stringent clean air and water regulations that drive new technological development. This is particularly true, for example, in the automotive industry and in heavy industries where emissions are released into the atmosphere or water. What effects will new technology have on the environment? This is yet unknown because the developments are still, relatively speaking, in their infancy. But suppose, for example, new products are developed,

products that can be ingested or inhaled, and that act upon the interior organs of the human body. Also, suppose that such products are released into the atmosphere. They might be carried by air within the state or across state lines. The state and federal environmental regulatory agencies would understandably be taking great interest in the environmental impact of such a release.

Although a host of topics are examined in this chapter, patents receive the bulk of the treatment. Other topics are also discussed as noted below

1. Intellectual Property Law
2. Contract Law
3. Patents
4. Infringement and Interferences
5. Copyrights
6. Trademarks
7. The Engineering Professional Licensing Process

21.2 Intellectual Property Law

An important area of law with which the chemical engineer must be concerned is *intellectual property law*. Technological development is all about ideas. Ideas have commercial value only if they can be protected by excluding others from exploiting those ideas. Typically, the way to protect ideas is through intellectual property rights such as *patents*, *trademarks*, *copyrights*, *trade secrets*, and *financial secrets*. Each of these concepts is briefly introduced in the next paragraph.

Patents can be used to protect useful inventions, ornamental designs, and even botanical plants. The patent allows the owner of the patent the right to prevent anyone else from making, using, or selling the "invention" covered by the claims of the patent. Trademarks are distinctive marks associated with a product or service (these are usually referred to as service marks), which the owners of the mark can use exclusively to identify themselves as the source of the product or service. Copyrights protect the expression of an idea, rather than the idea itself, and are typically used to protect literary works (such as this book) plus visual and performing arts, such as photographs, paintings and drawings, sculptures, movies, songs, etc. Trade secret laws protect technical or business information that a company uses to gain a competitive business advantage by virtue of the secret being unknown to others. Customer or client lists, secret formulations, or methods of manufacture are typical business secrets.

21.3 Contract Law

Another legal area that is relevant to chemical engineers is *contract law*. Any time two or more parties agree upon something, the principles of contract law come into play. The essential components of a contract are:

1. Parties competent to enter into a contractual agreement and subject matter, i.e., what the contract is about
2. Legal considerations (the inducement to contract such as the promise(s)) or payment exchanged, or some other benefit or loss or responsibility incurred by the parties.
3. Mutuality of agreement
4. Mutuality of contract

While verbal contracts can be legally binding, in the event of a dispute, it may be difficult to establish in court who said what. It is far better to memorialize the agreement in the form of a written contract. Who are the entities engaged in the contract? Typically, these are business entities. Also, one must also consider whether there may be some peripheral issues, or corporation or partnership law.

One of the basic principles of contract law is that the parties should have a meeting of minds, i.e., they should have a common understanding of what the terms of the contract mean. Sometimes it is not clear what particular terms mean or represent, or the meaning or its implications may change in time. What, for example, qualifies as "technology"? Not only is technology not well defined today, it may encompass that which are not even imagined today in the future.

Generally, contracts are employed with the sale and licensing of exclusive rights to a technology. Also there are agreements to fund technological research and development.

Finally, it should be noted that *most* chemical engineers leave *most* legal activities and decisions to the legal department. However, the chemical engineer *should* recognize that detailed contractual relation(s) should be maintained. Unfortunately, this is often not the case.

21.4 Tort Law

There is a branch of law that can retrospectively address certain situations in which property or people are harmed. That is *tort* law, a topic that continues to receive significant attention by politicians. A tort is a civil wrong,

other than a break of contract, for which the law provides a remedy. One can recover damages under tort law if a legal duty has been breached that causes foreseeable harm. These duties are created by law other than duties created by criminal law, governmental regulations, or those agreed to under a contract. Tort law can be very encompassing.

Chemical engineers have to consider the possibilities of reasonably foreseeable harm arising from their developments and activities and take prudent precautions to avert such harm. In the event that a technology is inherently dangerous, chemical engineers and/or their company may be held to a standard of strict liability for any harm caused by the technology regardless of whether an accident or problem was foreseeable.

Most chemical engineers are not at all interested in deliberately causing harm. But some have been. Some are presently. And, some will be. Technology can include military applications, where governments may be interested in developing new weapons. Suppose that new weapons are developed that can invade the human body and do harm. Is a cloud of toxic gas considered a poison gas? Or is it a collection of antipersonnel objects like shrapnel? And suppose such a cloud drifts over, or is released over, a civilian population? How will new weapons be treated under the Geneva Convention? The devastating effect of land mines, which remain lethal long after hostilities are ended and that wreak havoc upon unsuspecting civilians wandering into minefields, has been amply documented. Will new weapons remain harmful years after their deployment? What responsibilities do government(s) have morally, and under international law?[2]

21.5 Patents

In order to encourage new discoveries for the benefit of society/mankind, the U.S. Constitution provides for *patents*. These are *limited monopolies* provided in exchange for the public disclosure of new products and inventions. Patents are an integral part of a free enterprise system. The process discourages secret behavior by rewarding the aforementioned "monopoly" for prompt and adequate disclosure. The U.S. patent system is responsible for much of the growth in the chemical engineering industry because it encourages research upon which the growth is based. Attaining a patent is a procedure requiring skilled and experiences guidance. The patent must be fully disclosed, and the essentials must be covered by the claims.

Of all the intellectual property rights, the most pertinent for products and inventions developed by chemical engineers are patents. A patent can protect, for example, a composition of matter, an article of manufacture,

or a method of doing something. Patent rights are private property rights. *Infringement* (see next section) of a patent is a civil offense, not criminal. The patent owner must come to his or her own defense through litigation, if necessary. And, this is often a very expensive undertaking. Lawsuits costing more than a million dollars are not unusual. But at stake can be exclusive rights to a technology worth several orders of magnitude more.

Patents pertaining to any new product, process, equipment, use, or application should be reviewed by a patent attorney. The product or invention of concern may be involved in other patents. Patents available for purchase and lease as well as participation in patent pools should be reviewed by a legal expert.

As with any invention, the qualities noted earlier that make technology-related inventions patentable are *novelty*, *non-obvious*, and *utility*. While many "processes" of technology are already known, more are being discovered as are new ways of exploiting these, all of which can lead to patentable intentions. As noted above, the growth of patents is a clear indication of the industry's recognition of the potential in this field.

It is fair to say that a patent is essentially a contract between an inventor and the public. By full disclosure of the invention to the public, the patentee is given exclusive rights to control the use and practice of his/her product or invention. A patent gives the holder the power to prevent others from using or practicing the invention for a period of years from the date of granting such patent. In contrast, *trade secrets* (see later section) receive protection as long as the information is not public knowledge.

As noted earlier, a patent may be obtained on any new and useful process, method of manufacture, composition of matter, etc., provided it has not been known or used by others before the patentee made the invention or discovery. The invention must not have been described in a printed publication or been in public use or on sale for more than one year prior to the patent application. A patentable item must result from the use of *creative* ability above and beyond that which would be expected of a person working the particular field. A patentable item cannot be something requiring merely mechanical skill. Furthermore, a patent will not be granted for a change in a previously known item or process unless the change involves something entirely *new*.

A patent application consists of the following:

1. A petition, directed to the Commissioner of Patents requesting the grant of a patent
2. An oath, sworn to before a notary public or other designated officer

3. Specifications and claims, in which the claims to be patented are indicated along with detailed specifications including drawings (if applicable) and other pertinent information
4. The application filing fee

When the application is then examined and after a period of time, official action on the claim is taken [3].

21.6 Infringement and Interferences

Two topics directly related to patents are *infringement* and *interferences*. Infringement is of greater concern to the chemical engineer. However, both subject areas are briefly discovered below.

21.6.1 Infringement

The infringement of a patent may consist of making, using, or selling the invention covered by the patent without permission of the patentee. A *contributory infringement* involves the assistance or cooperation with another in the unauthorized making, using, or selling of a patented invention. If the infringement is deliberate, the court may award the patentee as much as three times the actual damages caused *plus* three times the earned profits. The award to the plaintiff is no more than the actual loss. The infringement process is conducted by a search in the Patent Office.

21.6.2 Interferences

A situation can arise in which two or more independent patent applications, covering essentially the same invention, is on file in the U.S. Patent Office. Although this rarely occurs, a procedure called *interference* is instituted to determine who is entitled to the patent. For example, an interference may also be instituted between a pending application and granted patent. Generally, interferences are decided on the basis of priority. The patent is granted to the applicant who was first to conceive the idea for the invention.

Because of the role of *priority* in any type of interference process, it is very important for an inventor to maintain complete records. A written description and sketches should be prepared by an inventor as soon as possible after the conception of an idea that might eventually be patented. This material should preferably be disclosed to one or more witnesses who

should indicate in writing that they understand the purpose, method, and structure of the invention. The disclosure should be signed and dated by the inventor and the witnesses. Additional details are available in the Patent Office [4].

21.7 Copyrights

Copyright is a form of protection provided by U.S. law to the author of "original works of authorship" fixed in any tangible medium of expression. The manner and medium of fixation are virtually unlimited. Creative expression may be captured in words, numbers, notes, pictures, or any other graphic or symbolic media. The subject matter of copyright is extremely broad. Although protection is available to both published and unpublished works, the authors are of the opinion that this rarely arises in the publication of science and engineering works since the law of gravity is the law of gravity, the heat transfer equation is the heat transfer equation, and the multiplication and/or log tables are just that; as one of the authors once said: "if you've read one thermodynamic textbook, you've read them all" [5].

Under the 1976 Copyright Act, the copyright owner has the exclusive right to reproduce, adapt, distribute, publicly inform, and publicly display the work. These exclusive rights are transferable and may be licensed, sold, donated to charity, or bequeathed to one's heirs. It is illegal for anyone to violate any of the exclusive rights of the copyright owner. If the copyright owner prevails in an infringement claim, the available remedies include preliminary and permanent injunctions (court orders to stop current or prevent future infringements), impounding, and destroying the infringing articles.

The exclusive rights of the copyright owner, however, are limited in a number of important ways. Under the *fair use* doctrine, which has long been a part of U.S. copyright law and was expressly incorporated in the 1976 Copyright Act, a judge may excuse unauthorized uses that may otherwise be infringing. Section 107 of the Copyright Act lists criticism, comments, news reporting, teaching, scholarship, and research as examples of uses that may be eligible for the fair use defense. In other instances, the limitation takes the form of a *compulsory license* under which certain limited uses of copyrighted works are permitted upon payment of specified royalties and compliance with statutory conditions. The Copyright Act also contains a number of statutory limitations covering specific uses for education purposes.

Chemical engineers should also be aware that there is no such thing as an "intentional copyright" that will automatically protect an author's works in countries around the world. Instead, copyright protection is "territorial" in nature, which means that copyright protection depends on the national laws where protection is sought. However, most countries are members of the Berne Convention on the Protection of Literary and Artistic Works and/or Universal Copyright Convention, the two leading international copyright agreements, which provide important protections for foreign authors. The Patent Office provides additional details [6].

21.8 Trademarks

A *trademark* is a brand name. A trademark includes any word, name, symbol, device, or any combination, used, or intended to be used in commerce to identify and distinguish the goods of one manufacturer or seller from goods manufactured or sold by others, and to indicate the source of the goods. A *service mark* is any word, name, symbols, device, or any combination, used, or intended to be used in commerce to identify and distinguish the services of one provider from services provided by others, and to indicate the source of the services. Not all trademarks need to be registered. But, federal registration has several advantages, including a notice to the public of the registrant's claim of ownership of the mark, a legal presumption of ownership nationwide, and the exclusive right to use the mark on or in connection with the goods or services set forth in the registration.

The trademark process initially consists of the following 7 steps:

1. Determines whether protection is required
2. Determines whether to hire a trademark attorney
3. Identifies trademark format
4. Clearly identifies the precise goods or services to which the trademark will apply
5. Determines whether anyone is already claiming trademark rights in a particular mark through a federal registration
6. Identifies the proper "basis" for filing a trademark application
7. Files the application online through the Trademark Electronic Application System

Filing is relatively simple process. Additional details are provided by the Patent Office [7].

21.9 The Engineering Professional Licensing Process

Becoming a licensed professional engineer (PE) was really not that important in the "old days", particularly for non-civil engineers. In fact, both authors of this text are not a PE. Interestingly both authors have claimed in all honesty, that it has not affected their professional development. However, this situation has changed. The chemical engineer that is not licensed will eventually experience significant constraints on his or her professional development. In effect, licensing has become a necessity for the chemical engineer.

The four requirements that must be satisfied for one to become a licensed professional engineer are listed below: [8]

1. Obtaining a degree from a four-year engineering program accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET)
2. Passing the Fundamentals of Engineering (FE) examination
3. Completion of four years of acceptable engineering experience
4. Passing the Principles and Practice of Engineering (PE) examination.

The reader should note that it appears that the engineering profession is moving toward a goal of requiring a license for all individuals who so desire to practice engineering. This statement particularly applies to chemical engineers in recent years. In addition, one of the authors [9] has prepared a series of tutorials addressing the various licensing exams.

21.10 Illustrative Open-Ended Problems

This and the last section provide open-ended problems. However, solutions *are* provided for the three problems in this section in order for the reader to hopefully obtain a better understanding of these problems which differ from the traditional problems/illustrative examples. The first problem is relatively straightforward while the third (and last problem) is somewhat more difficult and/or complex. Note that solutions are not provided for the 35 open-ended problems in the next section.

Problem 1: No matter how small the organization or how much resistance to change there may be, every person in a supervisory capacity can take

steps to minimize exposure to personal liability suits. These steps have the added effect of decreasing the likelihood of incidents that could lead to accidents. Consider the following scenario:

"If I'm every hurt in this place, I'm going to sue the living daylights out of the teacher [or supervisor]!" So said a student in an undergraduate science laboratory [or an employee in an industrial quality control laboratory]. Later, the student [or employee] is injured in an accident and brings a personal liability suit against the teacher [or supervisor] alleging negligence. While the outcome of the jury trial will probably depend most heavily upon the events that led immediately to the accident, a defense against negligence could include testimony to the level of care and supervision regularly provided by the teacher [or supervisor]. Discuss the retroactively verifiable actions of an individual that could be relevant to such a defense.

Solution: A coherent, understandable safety manual that deals specifically with the hazardous circumstances and safety procedures unique to the specific location involved is evidence of forethought and concern. A safety pledge signed by the employee (or student) acknowledging receipt of such a manual can be kept with personal records. Evidence of adequate training in the operation of laboratory or work place equipment is an additional verification of the concern for safety exhibited by a supervisor/organization.

A written plan for safety instruction that should increase in depth and scope in proportion to the hazards encountered by the employee (or student) can be complemented by a dated record of when such instruction was given. The record should also include a summary of the results of all routine training and safety drills. A syllabus documenting the contents of all safety training courses should also be a part of the permanent employee file.

Testimony to compliance with local laws, e.g., that safety glasses must be worn in the laboratory, etc., is very important. A jury is not likely to let a supervisor off who neglected to enforce safety practices that are legal requirements.

An up-to-date record of accident investigations of accidents and "near misses" with recommendations for changes *and* evidence of implementation of those recommendations are also very helpful. Posted signs and warnings, memoranda on safety issues, and records of meetings of an active safety committee are all physical evidence of a climate that is consistent with noncontributory negligence on the part of supervisory personnel.

Problem 2: Criminal prosecutions for violations of business-related laws are conducted by the Department of Justice. List as many factors you think

the Department of Justice may consider when deciding whether or not to conduct a *criminal* prosecution against a violator.
Comment: Think of factors that show how irresponsible or negligent the violator was rather than what laws or regulations were violated.

Solution: The following are some of the criteria used by the Department of Justice to assess the potential for criminal prosecution. You may have though of some that are not listed here.

1. Was the violation discovered by an internal audit or by a government investigation? Did the company commit adequate resources to its internal self-audit program? Does the self-audit program appear likely to uncover or prevent future violations? Does the self-audit program contain safeguards to ensure its integrity?
2. Assuming the violation was discovered by the company, was it disclosed
   - voluntarily
   - promptly upon discovery
   - with sufficient data of good quality and
   - before the regulatory agency discovered it?
3. What was the extent and quality of the cooperation with any government investigation of the violation?
4. Was the violation an isolated incident or one of many violations? How serious was the violation? How long did it go on? How often did it happen?
5. How many employees were involved in the violation? What were the levels of the employees involved in the violation? Was environmental compliance a criterion by which employees were judged? Were employees ever disciplined for environmental violations?
6. What efforts were made to remedy the results of the violation? What steps were taken to prevent a repetition of the violation?
7. What was the extent of good faith efforts to reach compliance agreements with government agencies? Were any such agreements fully carried out?

Problem 3: A chemical company's internal environmental audit uncovered a significant pollution problem involving repeated releases of a toxic chemical into the sewer system. The company took immediate action

and completely corrected the problem but did not inform any regulatory agency. Discuss both the legality and the ethics (see next chapter) of the company's actions.

Solution: Failure to report a spill could be a violation of a law, rule or regulation. It could result in fines or even criminal prosecution. The focus of this question, however, is strictly on the ethical aspects of the company's actions.

The following are some of the ethical considerations of this action. You may have thought of others.

While the company's prompt action in correcting the problem is praiseworthy, its failure to report it is *unethical*. Environmental regulatory programs are largely self-policing. They rely heaving on voluntary reporting. Failure to report such a problem lessens the integrity of the entire system and gives a false picture of the need to protect the environment.

Failure to report the release also places an unfair burden on other companies that use the same chemical. This may arise because the sewer authority, having observes high concentrations of the chemical, places additional monitoring and treatment requirements on all the companies. Had the company in question reported the releases, the other companies would not have had to implement these additional, potentially expensive, monitoring and treatment requirements.

Sewer workers and members of the public may have been harmed by direct exposure to the toxic chemicals. Exposure could continue for some time even after the releases have ended. If the chemical is odorless and tasteless, the releases may have gone undetected. Failure to report the releases may deprive these people of the ability to protect themselves from further exposure and from receiving proper medical help.

Even though the releases have stopped, much damage may have occurred to sewage treatment plants, streams, rivers, fish and other aquatic life. People may have been harmed by eating contaminated fish, clams, lobsters, and the like. It is unethical not to inform the public of such dangers. If a cleanup is required to remediate any damage caused to the environment, it would be unethical to remain silent while the taxpayers foot the bill.

See also Chapter 22 for additional information dealing with ethics.

21.11 Open-Ended Problems

This last section of the chapter contains open-ended problems as they relate to legal considerations. No detailed and/or specific solution is provided; that task is left to the reader, noting that each problem has either

a unique solution or a number of solutions or (in some cases) no solution at all. These are characteristics of open-ended problems described earlier.

There are comments associated with some, but not all, of the problems. The comments are included to assist the reader while attempting to solve the problems. However, it is recommended that the solution to each problem should initially be attempted *without* the assistance of the comments.

There are 35 open-ended problems in this section. As stated above, if difficulty is encountered in solving any particular problem, the reader should next refer to the comment, if any is provided with the problem. The reader should also note that the more difficult problems are generally located at or near the end of the section.

1. Describe the early history associated with laws.
2. Select a refereed, published article on legal activities/actions from the literature and provide a review.
3. Provide some normal everyday domestic applications involving the general topic of legal consideration.
4. Develop an original problem concerned with legal matters that would be suitable as an illustrative example in a book.
5. Prepare a list of the various technical books which have been written on law. Select the three best and justify your answer. Also select the three weakest books and, once again, justify your answer.
6. Refer to Problem 1 in the previous Section. Make a list of retroactively verifiable actions of an employee that could be relevant to such a defense.
7. The federal government considers its employees to be *personally* responsible for violations of environmental laws. The government reasons that since it is not possible for an employee to be required in his/her job description to violate any law, rule or regulation, then any such violations must have been committed while the employee was acting "outside the scope of his or her employment". If the employee acted outside the scope of his or her employment, then he/she is not entitled to legal help from the government and must personally pay any fines levied. If the employee is sent to jail, he/she would almost certainly be fired. Managers who directed or allowed employees to violate environmental laws, rules, or regulations would be held even more

responsible than the employees that he or she supervised. Give at least one benefit of this policy.

8. Refer to the previous problem. Give at least one drawback to this policy.
9. Refer to the previous two problems. Suggest some ways that the incentive program could be improved.
10. Refer to the previous three problems. Comment on the legality of the program.
11. There was an anti-technology movement in the 1960s in which engineers were blamed for the ills of our society. Engineers were blamed for nuclear bombs, pesticides, crashes, etc. This is sometimes described as the "Existential Pleasure of Engineering." Explain this description, and discuss how it relates to legal conduct.
12. Discuss the differences between a law and a regulation. Confine the discussion to federal laws and regulations.
13. Most chemical engineers will someday submit and obtain a patent. Discuss the advantages and disadvantages of applying for a U.S. patent and a foreign patent.
14. Most chemical engineers will someday submit and obtain a patent. Discuss the difference between a U.S. patent and a foreign patent.
15. Most chemical engineers will someday submit and obtain a copyright. Discuss the advantages and disadvantages of applying to a U.S. copyright and a foreign copyright.
16. Most chemical engineers will someday submit and obtain a copyright. Discuss the differences between a U.S. copyright and a foreign copyright.
17. Most chemical engineers will someday submit and obtain a trademark. Discuss the advantages and disadvantages of applying for to a U.S. trademark and a foreign trademark.
18. Most chemical engineers will someday submit and obtain a trademark. Discuss the differences between a U.S. trademark and a foreign trademark.
19. Provide your interpretation of intellectual property law.
20. Provide your interpretation of tort law.
21. Provide your interpretation of contract law.
22. Provide a layman's definition of a patent.
23. Provide a layman's definition of a trademark.
24. How does infringement come into play in Patent Office activities?

25. Provide detailed information on how the Patent Office operates.
26. Based on your experience, outline a potential patentable item/thought/concept.
27. Based on your experience, outline a potential trademark that represents you and/or your activities.
28. The question that often arises in trademark litigation is "how similar is it". Provide your interpretation of this comment.
29. The term "confusingly similar" is normally judged a violation in trademark litigation. Provide your interpretation of this comment.
30. The question that often arises in patent litigation is concerned with "obviousness". Provide your interpretation of this term.
31. Describe in layman terms "joint and several liability".
32. Describe in layman terms "cradle-to-grave".
33. One of the key legal standards is based on "what would a reasonable person do if…". What is your interpretation of this quote?
34. You recently conceived of how to increase the sales of a specialty product of a pharmaceutical company. The plan would involve both the company and those marketing (selling the product). Contracts are about to be signed when the pharmaceutical decides to go at it alone with your idea and essential bypass your "middleman" involvement. What legal options are available to you? Also indicate how someone in this position could better protect themselves in any future similar activity.
35. Theodore Engineers, in conjunction with an equipment manufacture, designed a boiler for a power plant to operate at or above an overall thermal efficiency of 34%. Once the boiler was installed and running, the unit operated with an efficiency of 32.5%. What legal options are available to the power plant?

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