

*Instructor's Guide*  
**Lesson #1**  
**Case Study #1: The Ford Pinto**

- 1) **At the end of the previous class,**
  - a) **Divide the class into groups containing 3 or 4 students each.**
  - b) **Pass out assignment sheet shown on p. 2 (file “fordread.doc”).**
  - c) **Mention to the students that in the next class they will be performing a case study concerning engineering ethics. State that participation in class is extremely important. Also state that in ethical issues there will be many different aspects of an issue to consider and there may be more than one “correct” answer to a particular question.**
  - d) **Emphasize again the importance of the students’ reading the assigned material prior to the next class (you may mention that there will be a short quiz at the beginning of the next class).**
  - e) **Also emphasize the importance of the students’ discussing within their group the questions at the bottom of the assignment sheet prior to the next class. These questions will be part of the discussion taking place in the next class.**
  
- 2) **At the beginning of class, you may wish to give the short quiz shown on p. 3 (file “fordquiz.doc”). This is a 5-minute quiz, graded pass/fail, designed to see if students read the assignment and retained the major points.**
  
- 3) **During class, conduct a discussion for each of the seven discussion questions given at the end of the assignment sheet. Comments you can use to stimulate discussion, provide focus, and summarize the discussion are given in red in the teacher’s version of the assignment sheet, pp. 4 - 7. Key conclusions for the case are given at the top of p. 4.**
  
- 4) **In the last 5 minutes of class, ask students to summarize the case study and the day’s discussions. Again, key points are given at the top of p. 4.**

## Case Study Number 1: The Ford Pinto

### Pre-class preparation:

#### I. Read the following World Wide Web pages. You will want to print a copy of each page for the in-class discussion.

1. [http://www.mojones.com/mother\\_jones/SO77/dowie.html](http://www.mojones.com/mother_jones/SO77/dowie.html) “Pinto Madness” Before you begin reading the page, call up and print all the links with this article (the links contain important charts and tables).
2. View the quick-time movie in the above web page.
3. [http://www.motherjones.com/mother\\_jones/SO77/larsen.html](http://www.motherjones.com/mother_jones/SO77/larsen.html) “Safety Last”
4. [http://www.motherjones.com/mother\\_jones/JF94/tulsky.html](http://www.motherjones.com/mother_jones/JF94/tulsky.html)

#### II. Some legal background:

Most of the lawsuits against Ford were civil suits for actual and punitive damages, but one case involved criminal charges. In Indiana a rear-end collision between a van and a Pinto caused a fire which killed three teenage girls in the Pinto. Ford was subsequently tried in Indiana for the criminal charge of negligent homicide (this is the trial mentioned in the second web page). There were no accompanying civil suits for this particular incident because, at the time, Indiana law severely limited the amount of damages which a parent could recover for the death of a minor child (no punitive damages were allowed and actual damages were limited to the lost wages which the minor might have earned in the time between his/her death and age 18). Many argue that Ford was acquitted of the negligent homicide charge because the standard of proof in a criminal charge is much higher than the standard of proof in a civil charge (reasonable doubt vs. a preponderance, or balancing, of the evidence). The most damaging civil case against Ford was Grimshaw vs. Ford, a California case in which a jury awarded \$150 million in punitive damages (later reduced to \$6 million on appeal).

#### Discussion Questions:

- 1) Is it ethical for a company, such as Ford, to perform cost-benefit analyses when lives are involved?
- 2) As a society we often perform cost-benefit analyses involving lives. For example, we do not require overpasses to be built at all railroad crossings, even though we know that an occasional fatal collision will occur if we do not. How is this different from what Ford did?
- 3) Do you think that the public was adequately informed concerning the dangers of the Pinto?
- 4) Could it be possible that upper management at Ford did not understand the engineering issues involved? What was Lee Iacocca’s technical background?
- 5) Suppose you are an engineer at Ford and you have just discovered the Pinto’s gas tank problems. You discuss the situation with your manager and he tells you he doesn’t see a problem. What, if anything, do you do next?
- 6) Ford designed the Pinto to satisfy all legal requirements for safety. Do they have a higher obligation? Does it matter that, during the design, Ford was successfully lobbying the US government to not impose more stringent safety requirements?
- 7) Should a profession impose ethical obligations which are more stringent than legal obligations? If so, why? If so, how should they be enforced?

Name \_\_\_\_\_

### **Short Quiz on Ford Pinto Ethics Case Study**

This quiz will be graded pass/fail and is designed to see how well you read the handout material for our first ethics case study. If you need more room, please write on the back side or add another sheet.

- 1) Very briefly, describe the problem with the Ford Pinto.
- 2) Name two of the possible solutions to the problem offered by the author of the first web page.
- 3) Briefly describe the Pinto cost-benefit analysis performed by Ford.

## Teacher's Discussion Guide to Case Study Number 1: The Ford Pinto

Key points in study:

- 1) An engineer has a responsibility to employ reasonable engineering practices concerning the safety of the products he or she develops.
- 2) As a society, we elect to take certain risks because of the possible benefits we may gain. For example, we choose to have a 70 mph speed limit on highways rather than drive at 20 mph, which would reduce the number of accidents, because the higher speed limit allows us to reach our destinations much faster. The key to society taking these risks is that the members of society give an informed consent.
- 3) Because of their technical background, engineers are more likely to grasp the possible societal and safety implications of a technology or a product than either company management or the general public. An engineer has the responsibility to inform management of possible safety hazards in products he or she is developing. If management does not respond appropriately, the engineer has a responsibility to work within his/her company to make sure that his/her concerns are known and given due consideration. The engineer may also have a responsibility to inform the public (i.e., to blow the whistle).
- 4) Engineers have ethical responsibilities concerning the public's safety which are more stringent than legal obligations.

**The text printed in italics below is the student's assignment (also found on p. 2). The text printed in bold typeface is for the teacher to use during class to help stimulate discussion.**

*Pre-class preparation:*

1. *Read the following World Wide Web pages. You will want to print a copy of each page for the in-class discussion.*

**All the Web pages are attached at the end of this teacher's guide.**

1. *[http://www.mojones.com/mother\\_jones/SO77/dowie.html](http://www.mojones.com/mother_jones/SO77/dowie.html) "Pinto Madness"  
Before you begin reading the page, call up and print all the links with this article (the links contain important charts and tables).*

**This is the magazine article which initially exposed the design flaw in the Ford Pinto gas tank.**

2. *View the quick-time movie in the above web page.*
3. *[http://www.motherjones.com/mother\\_jones/SO77/larsen.html](http://www.motherjones.com/mother_jones/SO77/larsen.html) "Safety Last"  
**This short article discusses the recall subsequently ordered by the Department of Transportation and discusses other safety defects in automobiles.***
4. *[http://www.motherjones.com/mother\\_jones/JF94/tulsky.html](http://www.motherjones.com/mother_jones/JF94/tulsky.html)  
**This very short article shows that Ford isn't the only company to have fuel-tank safety problems or to perform an internal cost-vs-benefits analysis to determine whether or not to perform a recall/redesign.***

## **II. Some legal background:**

*Most of the lawsuits against Ford were civil suits for actual and punitive damages, but one case involved criminal charges. In Indiana a rear-end collision between a van and a Pinto caused a fire which killed three teenage girls in the Pinto. Ford was subsequently tried in Indiana for the criminal charge of negligent homicide (this is the trial mentioned in the second web page). There were no accompanying civil suits for this particular incident because, at the time, Indiana law severely limited the amount of damages which a parent could recover for the death of a minor child (no punitive damages were allowed and actual damages were limited to the lost wages which the minor might have earned in the time between his/her death and age 18). Many argue that Ford was acquitted of the negligent homicide charge because the standard of proof in a criminal charge is much higher than the standard of proof in a civil charge (reasonable doubt vs. a preponderance, or balancing, of the evidence). The most damaging civil case against Ford was Grimshaw vs. Ford, a California case in which a jury awarded \$150 million in punitive damages (later reduced to \$6 million on appeal).*

### **Discussion Questions:**

1) *Is it ethical for a company, such as Ford, to perform cost-benefit analyses when lives are involved?*

**Hopefully, many students will be offended by entire concept of cost-benefit analyses when lives are involved. Before moving on to question 2, point out**

**a) As a society we perform cost-benefit analyses involving lives all the time (this is the thrust of question 2).**

**b) The \$200,000 figure for a human life looks incredibly low, but Ford didn't just come up with this figure — it was the same figure used by the government for other purposes.**

**c) The analyses involved a high degree of uncertainty — who really knew how many lives, if any, would be lost due to the Pinto's design.**

**d) Is Ford, or any company, obligated not to proceed with a product if there is any possibility the product can cause any harm? Wouldn't this have a chilling effect on innovations which could benefit society?**

**e) What is a reasonable standard to hold Ford to? Doesn't the evidence suggest that Ford was aware of the Pinto's safety problems, knew that the problems could be corrected at minimal cost, and that reasonable engineering practice would have been to correct the problems?**

2) *As a society we often perform cost-benefit analyses involving lives. For example, we do not require overpasses to be built at all railroad crossings, even though we know that an occasional fatal collision will occur if we do not. How is this different from what Ford did?*

**If, as a society, we did not allow any degree of risk, then all cars would be built like tanks, all crosswalks would be elevated, etc. Clearly, some degree of risk is acceptable if the benefits are sufficient. The key is that the costs and benefits need to**

be weighed by society rather than just by a company. This is necessary for two reasons — first, the benefits and costs are different — society will not consider Ford’s profits to be as beneficial as Ford will (although society will have some benefit), and second, since the costs are borne by society, it is only fair that society makes the decision.

3) *Do you think that the public was adequately informed concerning the dangers of the Pinto?*

This question is asked to prompt the issue of informed consent. Note that consumer awareness in the late ‘70s was not as extensive as it is now. Comment that in order to understand people’s actions you need to gain some historical context. Not also that as engineers we have a deeper understanding than the general public of complex technical issues, and that we have an obligation to educate the public and help them make informed decisions.

4) *Could it be possible that upper management at Ford did not understand the engineering issues involved? What was Lee Iacocca’s technical background?*

Iacocca graduated with an engineering degree from Lehigh. Note, however, that in many companies upper management will not have engineering backgrounds and that it is the engineer’s obligation to make sure that management understands the technical aspects of any potential problem. Poor decisions should never occur (or be later rationalized) because “management doesn’t (or didn’t) understand”.

5) *Suppose you are an engineer at Ford and you have just discovered the Pinto’s gas tank problems. You discuss the situation with your manager and he tells you he doesn’t see a problem. What, if anything, do you do next?*

The entire issue of whistle-blowing is extremely sensitive. Note that as an engineer you are dealing with two conflicting obligations - your obligations to your company and your larger obligations to society. Help the class come to some reasonable guidelines concerning whistle-blowing, such as those shown below:

- 1) Try first to work within the company structure, since many companies have independent organizations to investigate safety issues. Remember that safety issues may often involve uncertainty and “what if” scenarios, and that people can have honest differences of opinion.
- 2) If you cannot work within the company structure, or if you do and you still feel that the issue poses a significant threat to public safety, then you may be obligated to blow the whistle.

This is also a good time for the instructor to mention that before agreeing to work for a company, a student should try to get a sense of the company’s culture and attitudes concerning ethics, safety, the environment, etc. Determining the company’s culture from the outside is not an easy thing to do — usually an interviewee will get pat answers if he/she asks questions in this area. Perhaps the best a prospective employee can do is use outside resources to try to determine the company’s reputation concerning safety and ethics.

6) *Ford designed the Pinto to satisfy all legal requirements for safety. Do they have a higher obligation? Does it matter that, during the design, Ford was successfully lobbying the US government to not impose more stringent safety requirements?*

**This should provoke a good, long discussion. Tie it in with question 5) and discuss the entire need for a code of ethics which addresses issues not governed by law.**

7) *Should a profession impose ethical obligations which are more stringent than legal obligations? If so, why? If so, how should they be enforced?*

**This is the general issue which should evolve out of the discussion of question 6.**