



ME290

**Global Engineering Professional
Seminar**

**Engineering Ethics
Lecture-2**

Example Case 3: Ford Pinto



Produced 1971-1980

Example Case 3: Ford Pinto



- The Pinto was designed with its fuel tank in the back and a weak rear bumper.
- Testing found several safety defects
 - at 25mph+ the gas tank would rupture in an accident
- In addition, the doors could potentially jam during an accident (due to poor reinforcing).

- On May 28, 1972 a Pinto came to a stop in the middle lane. It was rear-ended at 28 MPH by a Ford Galaxy and burst into flame, killing the adult driver and severely burning the 13-year-old passenger.
- Many other incidents of Pinto gas tank explosions were reported. Ford eventually recalled all Pintos to make safety improvements, costing approx. \$11 per car



In September 1977 Mother Jones magazine published “Pinto Madness,” which uncovered internal Ford memos discussing cost benefit analysis involving human lives.

← → ↻ 🔒 Secure | <https://www.motherjones.com/politics/1977/09/pinto-madness/>

Pinto Madness

A Mother Jones Classic: For seven years the Ford Motor Company sold cars in which it knew hundreds of people would needlessly burn to death.

MARK DOWIE SEPTEMBER/OCTOBER 1977 ISSUE



Fatalities Associated with Crash-Induced Fuel Leakage and Fires

Expected Costs of producing the Pinto *with* fuel tank modifications:

- * Expected unit sales: 11 million vehicles (includes utility vehicles built on same chassis)
- * *Modification costs per unit: \$11.00*
- * **Total Cost: \$121 million**
[= 11,000,000 vehicles x \$11.00 per unit]

Expected Costs of producing the Pinto *without* fuel tank modifications:

- * Expected accident results (assuming 2100 accidents):
 - 180 burn deaths
 - 180 serious burn injuries
 - 2100 burned out vehicles
- * Unit costs of accident results (assuming out of court settlements):
 - \$200,000 per burn death*
 - \$67,000 per serious injury*
 - \$700 per burned out vehicle
- * **Total Costs: \$49.53 million**
[= (180 deaths x \$200k) + (180 injuries x \$67k) + (2100 vehicles x \$700 per vehicle)]

Ford chose the lower
cost (human lives)



Responsibility

Ford Employees

- Were they morally responsible to refuse to produce a car they knew would hurt the customer?
- Should they have put more effort into convincing President Lacocca that this car was unsafe?
- Should they follow President Lacocca's commands regardless of their opinions since he is their superior in the company

- Is President Lacocca responsible for the safety of his customers?
- Should he maximize profits for the company at any costs?
- If safety defects are found after production, does he have a moral obligation to inform all his customers?
- Should Lacocca have established a working environment where his employees did not feel that they would lose their jobs for disagreeing with him?

Safety?
What safety.



Lee Iacocca- Ford President

- Should Ford have trained his managers and presidents in safety?
- Does Ford have a responsibility to design a culture that encourages employees to bring up safety defects?
- Does Ford need to have a new policy that puts the safety of their products more important than maximizing profits?
- Does Ford have a moral responsibility to do what is best for his shareholders



Sections of the Code of Ethics for Pinto case:

NSPE Code of Ethics:

(I) Fundamental Canons (Rules)

1. Hold paramount the safety, health, and welfare of the public.
3. Issue public statements only in an objective and truthful manner.
5. Avoid deceptive acts.
6. Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

(II) Rules of Practice

1. Engineers shall hold paramount the safety, health, and welfare of the public.
3. Engineers shall issue public statements only in an objective and truthful manner.
5. Engineers shall avoid deceptive acts.

(III) Professional Obligations

1. Engineers shall be guided in all their relations by the highest standards of honesty and integrity.
2. Engineers shall at all times strive to serve the public interest
3. Engineers shall avoid all conduct or practice that deceives the public.
5. Engineers shall not be influenced in their professional duties by conflicting interests.

Example Case 4:

Gifts to Engineers

Facts:

- Engineers A, B, and C are principals or employees of a consulting engineering firm which does an extensive amount of design work for private developers. Usually, the contractors and suppliers recommended by the engineers for the selected bidding list obtain most of the contracts from the developers.
- From time to time, at holidays or on birthdays of the engineers with whom they dealt, the contractors and suppliers would give Engineers A, B, and C personal gifts of substantial value, such as **home furnishings, recreational equipment, gardening equipment**, etc.

Question:

- Was it ethical for Engineers A, B, and C to accept gifts from the contractors and suppliers?

Example Case 4: Gifts to Engineers

Conclusion:

- It was not ethical for Engineers A, B, and C to accept gifts from the contractors and suppliers.

References:

NSPE Code II.4.c

"Engineers shall not solicit or accept financial or other valuable consideration, directly or indirectly, from contractors, their agents, or other parties in connection with work for employers or clients for which they are responsible..."

NSPE Code III.5.b

"Engineers shall not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with clients or employers



Example Case 5: Employment—Cash Prize

Facts:

Engineer A works for UVW Engineering. As part of Engineer A's activities and employment responsibilities on behalf of UVW Engineering, he attends various conferences and trade shows. While attending a recent conference and trade show at UVW Engineering's expense, Engineer A won a prize worth \$5,000.

Question:

- Would it be ethical for Engineer A to keep the door prize or is he required to remit the prize to UVW Engineering?



Example Case 5: Employment—Cash Prize

Conclusion:

- Engineer A has an ethical obligation to, at a minimum, report the substantial door prize to UVW Engineering since Engineer A attended the educational event at the expense of UVW Engineering.
- The ultimate decision as to the best method of addressing this matter is solely between Engineer A and UVW Engineering.

References: NSPE Code of Ethics

Section II.4.c. Engineers shall not solicit or accept financial or other valuable..

Section III.5.b. Engineers shall not accept commissions or allowances...

Section III.9.e. Engineers shall continue their professional development ..
attending professional meetings and seminars.



Example Case 6: Copyright

Facts:

- Engineer A is a software systems engineer hired by NewSoft, a start-up company, to help in the development of a new software product. Engineer A soon learns that the plans for the proposed new product will be based upon proprietary software for which NewSoft does not have a license. Engineer A assumes that this is some sort of mistake and speaks to the company president about the matter. Engineer A is assured by the company president that the situation will be rectified. But several months pass, and no licenses have been secured for the proprietary software. Repeated efforts by Engineer A to get the NewSoft leadership to address this issue have failed. Engineer A is uncertain as to what steps she should take next.

Question:

- What are Engineer A's ethical obligations under the circumstances?



Example Case 6: Copyright

Conclusion : It would be ethical for Engineer A to insist that the matter be immediately resolved

- (1) the company must take immediate steps to obtain the necessary license, permission, or other legal clearance in order to proceed with the work or
- (2) the company must obtain a legal opinion from competent legal counsel demonstrating that the actions being taken by NewSoft do not amount to a copyright infringement.

If NewSoft fails to follow the course of action in either (1) or (2), Engineer A may either resign from NewSoft and/or report NewSoft's actions to the appropriate authorities.



Example Case 6: Copyright

References: NSPE Code of Ethics

- I.6. - Engineers, in the fulfillment of their professional duties, shall conduct themselves **honorably**, responsibly, ethically, ..
- II.1.d. Engineers shall not permit the use of their name or associate in business ... with fraudulent or **dishonest enterprise**.
- II.4. - NSPE Code of Ethics: Engineers shall act for each employer or client as **faithful agents** or trustees.
- III.9. : Engineers shall give credit for engineering work and will recognize the **proprietary interests** of others.
- III.9.c : Engineers, before undertaking work for others in connection with which the engineer may make improvements, plans, designs, inventions, or other records that may justify **copyrights** or patents, should enter into a positive agreement regarding ownership



Example Case 7: Employee/Employer Files

Facts:

Engineer A, employed by BBB Engineering, recently accepted a position as an engineer with CCC Engineers, a competitor of BBB Engineering. Engineer A has files in his office including the following:

1. **Client files**, which include correspondence between Engineer A and various clients while employed by BBB Engineering and project specific technical information;
2. **Technical information files**, such as articles, publications, and external reports, that Engineer A has personally received and saved during the course of his employment with BBB Engineering to assist him in providing technical and professional services for clients;
3. **Personal files**, which include personal correspondence received from past and present clients acknowledging and expressing appreciation for Engineer A's work on various engineering projects and technical information obtained outside of his employment by BBB Engineering.

Example Case 7: Employee/Employer Files

Questions:

1. Would it be ethical for Engineer A to take the **client files** with him when he terminates his employment with BBB Engineering?
2. Would it be ethical for Engineer A to take the **technical information files** with him when he terminates his employment with BBB Engineering?
3. Would it be ethical for Engineer A to take the **personal files** with him when he terminates his employment with BBB Engineering?



Example Case 7: Employee/Employer Files

Conclusion :

1. It would not be ethical for Engineer A to take the **client files** or project specific files.
2. It would not be ethical for Engineer A to take the corporate or **technical information files**.
3. It would be ethical for Engineer A to take **personal files**.

References: NSPE Code of Ethics

Section I.4. Engineers, in the fulfillment of their professional duties, shall act for each employer or client as faithful agents ..

Section II.1.c. Engineers shall not reveal facts, data, or information ...

Section III.4. Engineers shall not disclose, confidential information of any client or employer, ..



Summary

- Engineers should consider their ethical responsibilities while working as professionals
- ASME and NSPE Code of Ethics are good guides for Engineers
- Use ASME and NSPE **Code of Ethics** as guide in your engineering practices

Additional Reading

- www.onlineethics.org/Resources.aspx?resource-type=29_772
- <http://www.onlineethics.org/Resources/NSPEcases.aspx>
- <https://www.cs.cmu.edu/~bmclaren/ethics/caseframes/index.html>
- <https://www.nspe.org/resources/ethics/board-ethical-review>